



Dart Hawkesbury
1270 Aberdeen St Hawkesbury, ON K6A 1K7 Canada
Tel (613) 632-5200

Purchasing Receipts

| PO No | Supplier | Line Item No | Rel No | Terms | Purchased Item | Description | For Part No | Project | Equipment ID | Order Qty | Due Date | Received Quantity | Accounting Job No | Container No | Status | Receive Date | Price/Unit | Aging Past Days | Total | Supplier Name |
|----------|-----------|--------------|--------|----------|----------------------|--|-------------|---------|--------------|-----------|-----------|-------------------|-------------------|--------------|--------|--------------|---------------|-----------------|----------|----------------------|
| P0040374 | ACI001-VC | 1 | ✓ | 1 Net 30 | M6061T6B1.000X12.000 | 6061-T6 Bar 1.00 X 12.00 : MATERIAL: 6061-T6/T651/T6510/T6511/T62 ALUMINUM BAR PER QQ-A-225/8 OR AMS-QQ-A-225/8 OR AMS 4117/4128/4115/4116 OR QQ-A-200/8 OR AMS-QQ-A-200/8 OR AMS 4160 OR ASTM B211 OR ASTM B221 receive ft | | | | 20 | 7/16/2018 | 20 | | S092911 | Stock | 7/16/2018 | \$ 2.64 / ft | 2 | \$52.74 | Acier Ouellette Inc. |
| | | 2 | ✓ | | M6061T6B1.000X12.000 | 6061-T6 Bar 1.00 X 12.00 : MATERIAL: 6061-T6/T651/T6510/T6511/T62 ALUMINUM BAR PER QQ-A-225/8 OR AMS-QQ-A-225/8 OR AMS 4117/4128/4115/4116 OR QQ-A-200/8 OR AMS-QQ-A-200/8 OR AMS 4160 OR ASTM B211 OR ASTM B221 receive ft | | | | 12 | | 12 | | S092912 | Stock | 7/16/2018 | \$ 57.27 / ft | 2 | \$687.29 | Acier Ouellette Inc. |
| | | 3 | ✓ | | M6061T6B1.250X4.500 | 6061-T6 Bar 1.25 X 4.50 : MATERIAL: 6061-T6/T651/T6510/T6511/T62 ALUMINUM BAR PER QQ-A-225/8 OR AMS-QQ-A-225/8 OR AMS 4117/4128/4115/4116 OR QQ-A-200/8 OR AMS-QQ-A-200/8 OR AMS 4160 OR ASTM B211 OR ASTM B221 receive ft | | | | 8 | | 8 | | S092913 | Stock | 7/16/2018 | \$ 43.86 / ft | 2 | \$350.85 | Acier Ouellette Inc. |
| | | 4 | ✓ | | M6061T6B1.500X3.000 | 6061-T6 Bar 1.500 X 3.000 : MATERIAL: 6061-T6/T651/T6510/T6511/T62 ALUMINUM BAR PER QQ-A-225/8 OR AMS-QQ-A-225/8 OR AMS 4117/4128/4115/4116 OR QQ-A-200/8 OR AMS-QQ-A-200/8 OR AMS 4160 OR ASTM B211 OR ASTM B221 receive ft | | | | 6 | | 6 | | S092914 | Stock | 7/16/2018 | \$ 18.31 / ft | 2 | \$109.85 | Acier Ouellette Inc. |
| | | 5 | ✓ | | M1018R1.375 | M1018R1.375 : MATERIAL: AISI 1018-1025 ROUND BAR M1010S20GA AS PER MIL-S-7097 OR ASTM A108 receive ft | | | | 15 | | 15 | | S092915 | Stock | 7/16/2018 | \$ 6.06 / ft | 2 | \$90.86 | Acier Ouellette Inc. |

| PO No | Supplier | Line Item No | Rel No | Terms | Purchased Item | Description | For Part No | Project | Equipment ID | Order Qty | Due Date | Received Quantity | Accounting Job No | Container No | Status | Receive Date | Price/Unit | Aging Days | Past Due | Total | Supplier Name |
|-------|----------|--------------|--------|-------|--------------------|--|-------------|---------|--------------|-----------|----------|-------------------|-------------------|--------------|--------|--------------|---------------|------------|----------|----------|----------------------------|
| | | 6 | AT | | M1018B1 000X03.000 | 1010-1025 Steel Bar 1,000 X 3,000 : MATERIAL: AISI 1010- 1025 OR ASTM A36/A366/A569/A570 OR OR CSA G40-21 38W/44W/50W/60W/70W CSA G40-21 OR 38W/44W/50W/60W/70W | | | | 12 | | 12 | | S092916 | Stock | 7/16/2018 | \$ 12.24 / ft | 2 | | \$146.82 | Acier Ouellette Inc. |
| | | 8 | AT | | M5052H32S.125 | 5052-H32 .125 Sheet MATERIAL: 6061- T6/T62/T651 ALUMINUM SHEET OR PLATE SPECIFICATION: QQ-A- 250/11 OR AMS-QQ-A- 250/11 OR AMS 4025 OR 4027 OR ASTM B209 | | | | 32 | | 32 | | S092917 | Stock | 7/16/2018 | \$ 8.21 / sf | 2 | | \$262.72 | Acier Ouellette Inc. |
| | | 9 | AT | | MT-4140QT-R0.750 | AISI 4140 Quenched &Tempered Steel Round Bar 0.750" Dia. : AISI 4140 Q&T Round Bar : MATL: AISI 4130 QUENCHED & TEMPERED ROUND BAR AS PER ASTM 4140 QT OR ASTM 4142 QT | | | | 20 | | 15 | | S093067 | Stock | 7/16/2018 | \$ 3.09 / ft | 2 | | \$46.40 | Acier Ouellette Inc. |
| | | 10 | AT | | MT-4140QT-R1.000 | AISI 4140 Quenched &Tempered Steel Round Bar 1.000" Dia. : AISI 4140 Q&T Round Bar : MATL: AISI 4130 QUENCHED & TEMPERED ROUND BAR AS PER ASTM 4140 QT OR ASTM 4142 QT | | | | 15 | | 20 | | S093068 | Stock | 7/16/2018 | \$ 5.03 / ft | 2 | | \$100.63 | Acier Ouellette Inc. |
| | | 11 | AT | | MT-4140QT-R2.250 | AISI 4140 Quenched &Tempered Steel Round Bar 2.250" Dia. : AISI 4140 Q&T Round Bar : MATL: AISI 4130 QUENCHED & TEMPERED ROUND BAR AS PER ASTM 4140 QT OR ASTM 4142 QT | | | | 10 | | 10 | | S092919 | Stock | 7/16/2018 | \$ 25.64 / ft | 2 | | \$256.40 | Acier Ouellette Inc. |
| | | 12 | AT | | MT-4140QT-R4.000 | AISI 4140 Quenched &Tempered Steel Round Bar 4.000" Dia. : AISI 4140 Q&T Round Bar : MATL: AISI 4130 QUENCHED & TEMPERED ROUND BAR AS PER ASTM 4140 QT OR ASTM 4142 QT | | | | 3 | | 3 | | S092920 | Stock | 7/16/2018 | \$ 85.28 / ft | 2 | | \$255.84 | Acier Ouellette Inc. |
| | | 13 | AT | | MT-HRS-P-0.3125 | Hot Rolled Steel Plate 0.3125" (44W) MATERIAL: HOT ROLLED STEEL PLATE ASTM A36 OR ASTM A1011 OR 44W OR ASTM A1018 | | | | 16 | | 16 | | S092921 | Stock | 7/16/2018 | \$ 11.60 / sf | 2 | | \$185.64 | Acier Ouellette Inc. |

| PO No | Supplier | Line Item No | Rel No | Terms | Purchased Item | Description | For Part No | Project | Equipment ID | Order Qty | Due Date | Received Quantity | Accounting Job No | Container No | Status | Receive Date | Price/Unit | Aging Days | Past Due | Total | Supplier Name |
|---------------|----------|--------------------|-----------|-------|----------------|--|-------------------|---------|-----------------|--------------|-------------|----------------------|----------------------|-----------------|--------|-----------------|--------------|---------------|-------------|-------------------|----------------------------|
| | | 14 | | | M6061T6R1.375 | 6061-T6 Round Bar 1.375" MATERIAL: 6061-T6/T651/T6510/T6511/T62 ALUMINUM ROUND BAR AS PER QQ-A-225/8 OR AMS-QQ-A-225/8 OR AMS 4117 4128/4115/4116 OR QQ- AA-200/8 OR AMS-QQ-A- 200/8 OR AMS 4160 OR ASTM B221 OR ASTM B221 receive ft | | | | 15 | | 15 | | S092922 | Stock | 7/16/2018 | \$ 6.03 / ft | 2 | | \$90.50 | Acier Ouellette Inc. |
| Total: | | | | | | | | | | | | 184 | | | | | | | | \$1,991.16 | |

Plex 7/18/2018 9:10 AM dart.Tollis.Andrew

BON DE LIVRAISON

| | | | |
|---------------------|------------|----------------------------|-----------------|
| NO. DU BON | 113476 | DATE DE LIVRAISON | 20/Jul/16 |
| NIR: | R-015478-2 | NO DE TELEPHONE DU CLIENT: | 450-963-3693 |
| NO COMMANDE CLIENT: | OU-46072 | REPRESENTANT: | Guillaume Morin |
| CHAUFFEUR: | JP COMEAU | NO COMMANDE: | 99115 |

| | | | |
|-----------------------------------|--|--|--|
| VENDU A | | ACIERS TRANSBEC (1997) LTEE 4054, BOUL LE CORBUSIER #201 LAVAL, QC H7L 5R2 | |
| NO. DE LIVRAISON | | NO CLIENT: 3693 | |
| DESCRIPTION ALLIAGE / TREMPAGE | | PLAT 1.250 X .500 6061/T6 | |
| LONGUEUR | | NATUREL MILL | |
| COMMANDE CLIENT | | 75 | |
| NO. DE PIÈCES | | 500 | |
| NO. DE PIÈCES | | 500 | |

3 MILLITEST + CERT. CONFORMITÉ

Mill Test (Tensile Properties of Aluminum)

Test Date.: 14/Jul/16

| Order No. | Alloy | Temper | Yield (ksi) | Ultimate Tensile (ksi) | Total Elongation (%) | Hardness (Rockwell E) | Conductivity % | Report No. |
|-------------|-------|--------|-------------|------------------------|----------------------|-----------------------|----------------|------------|
| 99115-1-1A1 | 6061 | T6 | 37.6 | 41.4 | 21.10 | 92.00 | | 5647 |

Certificate of compliance (Certificat de conformité)

Normes: (ANSI H35.1-1997) & (ASTM B221)

Order No. Hardness (Webster) #1 #2 Cast No. CAST CHEMICAL COMPOSITION:

| Order No. | Hardness (Webster) #1 | Hardness (Webster) #2 | Cast No. | Al | Si | Fe | Cu | Mn | Mg | Cr | Ni | Zn | Ti | Ga | V | B | Zr | Bi | Pb | Sn | Sr | Co |
|-------------|-----------------------|-----------------------|----------|-------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| 99115-1-1A1 | 15 | 15 | 33297 | 97.96 | 0.57 | 0.24 | 0.20 | 0.08 | 0.85 | 0.06 | 0.00 | 0.01 | 0.02 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

VÉRIFICATION DE MATÉRIEL

DATE

20/07/16

VÉRIFIÉ PAR

SIGNATURE

SIGNATURE
CLIENT:

DATE:

5



ACIER OUELLETTE INC.

935, Boul. du Havre
Salaberry de Valleyfield (Québec) J6S 5L1
Tél.: 450-377-4248 Mtl: 514-336-4248 Ext.: 800-667-4248
Fax: 450-377-5696 Mtl: 514-336-4246 Ext.: 866-456-4242

Order - Customer

CO00098703

Billed to

DART AEROSPACE LTD

1270, ABERDEEN ST.
HAWKESBURY, Ontario, K6A 1K7

F-M

Shipped to

, Ontario,

Att: CHANTAL LAVOIE Tél.: 613-632-5200

Delivery Route 5

Customer N° CL10001056
Date 2018/07/05
Delivery date 2018/07/13
Your order N° 040374
Processed by Eric Kaehlert
Salesman
Carrier OUELLETTE VALLEYFIELD
Credit Terme Net 30 Days

| Product Description | Weight | Qty | UM | PCS NB | | | Internal Use Only | | |
|--|--------|-------|-----------|--------|-----|-----|-------------------|---|-----|
| | | | | CMD | EXP | B/O | IN | I | S C |
| 1 FLAT ALU 1/2 X 1 1/4 6061-T6 * FAL-12114 1 X 20' ** CERTIFICATE ** LINE#1 <i>Heat 33297</i> | 15.70 | 20.00 | PL \$CLB | 0.00 | | | | | |
| 2 FLAT ALU 1 X 12 6061-T6 * FAL-112 SAW CUT 1 X 12' ** CERTIFICATE ** LINE#2 <i>Heat 60C1M170313A</i> | 169.34 | 12.00 | PL \$CLB | 0.00 | | | | | |
| 3 ALU PLATE 1 1/4 6061-T651 RANDOM PAL-1146061-V SAW CUT 1 PC 4-1/2" X 8' ** CERTIFICATE ** LINE#3 <i>Heat: 837116367</i> | 53.88 | 3.00 | PI2 \$CLB | 0.00 | | | | | |
| 4 FLAT ALU 1 1/2 X 3 6061-T6 * FAL-1123 1 X 6' ** CERTIFICATE ** LINE#4 <i>Heat 84E180264</i> | 75.75 | 6.00 | PL \$CLB | 0.00 | | | | | |
| 5 ROUND CR 1 3/8 1018 (R) RCR-138 1 X 15' ** CERTIFICATE ** LINE#5 <i>Heat: 138426</i> | 75.75 | 15.00 | PL \$CLB | 0.00 | | | | | |



Order - Customer

CO00098703

| Product Description | | Weight | Qty | UM | PCS NB | | | Internal Use Only | | | | |
|-----------------------|--|--------|-------|-----------|--------|-----|-----|-------------------|---|---|---|-----|
| | | | | | CMD | EXP | B/O | IN | I | S | C | OUT |
| 6 | FLAT CR 1 X 3 1018 (R) FCR-13 1 X 12' R/L ** CERTIFICATE ** LINE# 6 | 122.40 | 12.00 | PI_\$CLB | 0.00 | | | | | | | |
| heat: 171456 | | | | | | | | | | | | |
| 7 | ALU SHEET 1/8 5052-H32 RANDOM FEAL-18-V5052 1 X 4' X 8' PVC 1 SIDE ** CERTIFICATE ** LINE# 8 | 56.38 | 32.00 | PI2_\$CLB | 0.00 | | | | | | | |
| heat: 7101 705161-4 | | | | | | | | | | | | |
| 8 | ROUND 4140 HEAT TREAT 3/4 (R) R4140-34H 1 X 20' R/L ** CERTIFICATE ** LINE# 9 | 30.04 | 20.00 | PI_\$CLB | 0.00 | | | | | | | |
| heat: 153574 | | | | | | | | | | | | |
| 9 | ROUND 4140 HEAT TREAT 1 (R) R4140-1H SAW CUT 1 X 15' ** CERTIFICATE ** LINE# 10 | 40.05 | 15.00 | PI_\$CLB | 0.00 | | | | | | | |
| heat: 177569 | | | | | | | | | | | | |
| 10 | ROUND 4140 HEAT TREAT 2 1/4 (R) R4140-214H SAW CUT 1 X 10' ** CERTIFICATE ** LINE# 11 | 135.20 | 10.00 | PI_\$CLB | 0.00 | | | | | | | |
| heat: 1744907 | | | | | | | | | | | | |
| 11 | TRANSIT ST-JEROME 09-07 ** R4140-4H SAW CUT 1 X 3' ** CERTIFICATE ** LINE# 12 | 132.21 | 3.00 | PI_\$CLB | 0.00 | | | | | | | |
| heat: 22442 / 1280470 | | | | | | | | | | | | |
| 12 | PLATE 44W 5/16 RANDOM P44-516-V | 204.00 | 16.00 | PI2_\$CLB | 0.00 | | | | | | | |



CO00098703

| Product Description | Weight | Qty | UM | PCS NB | | | Internal Use Only | | | | | |
|---|-------------------|--------|-----------|-------------------------|-----|-----|-------------------|---|---|---|-----|--|
| | | | | CMD | EXP | B/O | IN | I | S | C | OUT | |
| COUPE AU FEU 1 X 4' X 4' ** CERTIFICATE ** LINE# 13 | | 204.00 | LBS_\$CLB | | | | | | | | | |
| ** TRANSIT ST-JEROME 11-07 ** | | | | | | | | | | | | |
| 13 ROUND ALU 1 3/8 6061-T6 * RAL-138 1 X 15' ** CERTIFICATE ** LINE# 14 | 26.16 5132 | 15.00 | PI_\$CLB | 0.00 | | | | | | | | |
| Total Weight (LBS) : 1 092.86 | | | | NIR : R-109516-6 | | | | | | | | |

Conditions :
All sold and delivered materials remain the property of "Acter Ouellette Inc." until payment is made in full, complete and cashed. All lost materials are at the buyer's expense. The warranty offered by "Acter Ouellette Inc." is the same as offered and honored by the manufacturer and his warranty is transferred by "Acter Ouellette Inc." to the client. The buyer hereby accepts to respect the following conditions: Net 30 days from billing date and the buyer accepts to pay administration charges of 2% per month (24% per annum) on all past due amounts over 30 days. Any default in respect with this contract will lead to payment by acceleration and permits to the seller, at his choice to claim for the balance due or the repossession of the goods sold. All claims must be made within five (5) days of this document enclosed. Any merchandise that has been damaged, cut or modified cannot be returned. All goods returned must be with our authorization and are subject to a 25% restocking charge.

| | | | | | | | |
|---------------|---------------|----------------|------|----------------------|--|--|--|
| Prepared By : | Verified By : | Delivered By : | Time | Customer's Signature | | | |
| | | | | | | | |

HST 341.99

Total (\$CAD) 2 972.69

Deposit 0.00

Balance 2 972.69



Dart Aerospace Ltd.
1270 Aberdeen St
Hawkesbury, ON
K6A 1K7
Canada

Tel (613) 632-5200

PURCHASE ORDER **PO040374**

Supplier: ACI001-VC
Acier Ouellette Inc.
935 Boul. Du Havre
Valleyfield
QC
J6S 5L1 Canada
Phone: 800 667 4248
Fax: 450 377 5696

PO No: PO040374
PO Date: 6/29/18
Due Date: 7/11/18
Purchase Order
Revision:
Revision Date:
Ship-To Contact: Phone:

E-MAILED
JUL 05 2018

Ship To: 1270 Aberdeen Street
Hawkesbury
ON
K6A 1K7 Canada
Phone: 613-632-5200

Via: Ground
Pymt Terms: Net 30
Freight Terms:
Special Comments: QUOTE NO. sou0117139

Items

| Line Item | Job | Part | Supplier Part No | Description | Status | Due Date | Order Quantity | Received Quantity | Balance | Unit Price (CAD) | Extended Price |
|-----------|-----|----------------------|------------------|--|--------|----------|----------------|-------------------|---------|------------------|----------------|
| 1 | | M6061T6B0.500X01.250 | | 6061-T6 Bar .500 X 1.25 : MATERIAL: 6061-T6/T651/T6510/T6511/T62 ALUMINUM BAR PER QQ-A-225/8 OR AMS-QQ-A-225/8 OR AMS 4117/4128/4115/4116 OR QQ-A-200/8 OR AMS-QQ-A-200/8 OR AMS 4160 OR ASTM B211 OR ASTM B221 receive ft | Firmed | 7/11/18 | 20 ft | 0 ft | 20 ft | \$2.637/ft | \$52.74 |
| | | | | | | | ✓ | 20ft | | At 18/07/18 | |
| 2 | | M6061T6B1.000X12.000 | | 6061-T6 Bar 1.00 X 12.00 : MATERIAL: 6061-T6/T651/T6510/T6511/T62 ALUMINUM BAR PER QQ-A-225/8 OR AMS-QQ-A-225/8 OR AMS 4117/4128/4115/4116 OR QQ-A-200/8 OR AMS-QQ-A-200/8 OR AMS 4160 OR ASTM B211 OR ASTM B221 receive ft | Firmed | 7/11/18 | 12 ft | 0 ft | 12 ft | \$57.274166/ft | \$687.29 |
| | | | | | | | ✓ | 12ft | | At 18/07/18 | |
| 3 | | M6061T6B1.250X04.500 | | 6061-T6 Bar 1.25 X 4.50 : MATERIAL: 6061-T6/T651/T6510/T6511/T62 ALUMINUM BAR PER QQ-A-225/8 OR AMS-QQ-A-225/8 OR AMS 4117/4128/4115/4116 OR QQ-A-200/8 OR AMS-QQ-A-200/8 OR AMS 4160 OR ASTM B211 OR ASTM B221 receive ft | Firmed | 7/11/18 | 8 ft | 0 ft | 8 ft | \$43.85625/ft | \$350.85 |
| | | | | | | | ✓ | 8ft | | At 18/07/18 | |

| Items | | | | | | | | | | | |
|-----------|-----|---------------------|------------------|--|--------|----------|----------------|-------------------|---------|------------------|----------------|
| Line Item | Job | Part | Supplier Part No | Description | Status | Due Date | Order Quantity | Received Quantity | Balance | Unit Price (CAD) | Extended Price |
| 4 | | M6061T6B1.500X3.000 | | 6061T6 Bar 1.500 X 3.000 : MATERIAL: 6061-T6/T651/T6510/T6511/T62 ALUMINUM BAR PER QQ-A-225/8 OR AMS-QQ-A-225/8 OR AMS 4117/4128/4115/4116 OR QQ-A-200/8 OR AMS-QQ-A-200/8 OR AMS 4160 OR ASTM B211 OR ASTM B221 receive ft | Firmed | 7/11/18 | 6 ft | 0 ft | 6 ft | \$18.308333/ft | \$109.85 |
| 5 | | M1018R1.375 | | M1018R1.375 : MATERIAL: AISI 1018-1025 ROUND BAR M1010S20GA AS PER MIL-S-7097 OR ASTM A108 receive ft | Firmed | 7/11/18 | 15 ft | 0 ft | 15 ft | \$6.0573333/ft | \$90.86 |
| 6 | | M1018B1.000X03.000 | | 1010-1025 Steel Bar 1.000 X 3.000 : MATERIAL: AISI 1010-1025 OR ASTM A36/A366/A569/A570 OR OR CSA G40-21 38W/44W/50W/60W/70W CSA G40-21 OR 38W/44W/50W/60W/70W | Firmed | 7/11/18 | 12 ft | 0 ft | 12 ft | \$12.235/ft | \$146.82 |
| 7 | | MT-1144-R4.500 | | 1144 Steel Proof Round Bar 4.500" | Firmed | 7/18/18 | 8 ft | 0 ft | 8 ft | \$15.210833/ft | \$121.69 |
| 8 | | M5052H32S.125 | | 5052-H32 .125 Sheet MATERIAL: 6061-T6/T62/T651 ALUMINUM SHEET OR PLATE SPECIFICATION: QQ-A-250/11 OR AMS-QQ-A-250/11 OR AMS 4025 OR 4027 OR ASTM B209 | Firmed | 7/11/18 | 32 sf | 0 sf | 32 sf | \$8.21/sf | \$262.72 |
| 9 | | MT-4140QT-R0.750 | | AISI 4140 Quenched & Tempered Steel Round Bar 0.750" Dia. : AISI 4140 Q&T Round Bar : MAT'L: AISI 4130 QUENCHED & TEMPERED ROUND BAR AS PER ASTM 4140 QT OR ASTM 4142 QT | Firmed | 7/11/18 | 20 ft | 0 ft | 20 ft | \$3.0935/ft | \$61.87 |
| 10 | | MT-4140QT-R1.000 | | AISI 4140 Quenched & Tempered Steel Round Bar 1.000" Dia. : AISI 4140 Q&T Round Bar : MAT'L: AISI 4130 QUENCHED & TEMPERED ROUND BAR AS PER ASTM 4140 QT OR ASTM 4142 QT | Firmed | 7/11/18 | 15 ft | 0 ft | 15 ft | \$5.031333/ft | \$75.47 |

| Items | | | | | | | | | | | |
|----------------------------------|-----|-----------------------|------------------|---|--------|----------|----------------|-------------------|---------|------------------|----------------|
| Line Item | Job | Part | Supplier Part No | Description | Status | Due Date | Order Quantity | Received Quantity | Balance | Unit Price (CAD) | Extended Price |
| 11 | | MT-4140QT-R2.250 | | AISI 4140 Q&T Round Bar : MAT'L: AISI 4130 QUENCHED & TEMPERED ROUND BAR AS PER ASTM 4140 QT OR ASTM 4142 QT | Firmed | 7/11/18 | 10 ft | 0 ft | 10 ft | \$25.64/ft | \$256.40 |
| 12 | | MT-4140QT-R4.000 | | AISI 4140 Quenched & Tempered Steel Round Bar 4.000" Dia. : AISI 4140 Q&T Round Bar : MAT'L: AISI 4130 QUENCHED & TEMPERED ROUND BAR AS PER ASTM 4140 QT OR ASTM 4142 QT | Firmed | 7/11/18 | 3 ft | 0 ft | 3 ft | \$85.28/ft | \$255.84 |
| 13 | | MT-HRS-P-0.3125 | | Hot Rolled Steel Plate 0.3125" (44W) MATERIAL: HOT ROLLED STEEL PLATE ASTM A36 OR ASTM A1011 OR 44W OR ASTM A1018 | Firmed | 7/11/18 | 16 sf | 0 sf | 16 sf | \$11.59625/sf | \$185.54 |
| Line Item Note 1 pcs 4 ft x 4 ft | | | | | | | | | | | |
| 14 | | M6061T6R1.375 | | 6061-T6 Round Bar 1.375" : MATERIAL: 6061- T6/T651/T6510/T6511/T62 ALUMINUM ROUND BAR AS PER QQ-A-225/8 OR AMS-QQ-A-225/8 OR AMS 4117 4128/4115/4116 OR QQ- AA-200/8 OR AMS-QQ-A- 200/8 OR AMS 4160 OR ASTM B221 OR ASTM B221 receive ft | Firmed | 7/11/18 | 15 ft | 0 ft | 15 ft | \$6.033333/ft | \$90.50 |
| 15 | | MT-4140-B-1.000X1.000 | | 4140 Steel Bar 1.000 X 1.000 : AISI 4140N STEEL BAR PER MIL-S-5626, AMS 6382, AMS 6349, AMS 6529 receive ft | Firmed | 7/19/18 | 24 ft | 0 ft | 24 ft | \$20.495833/ft | \$491.90 |
| 16 | | MT-4140-S-1.500X2.000 | | 4140 Steel Bar 1.500 X 2.000 : MAT'L: AISI 4140 / 4142 STEEL SHEET OR PLATE MINIMUM ROCKWELL C = 28 Rc MAXIMUM ROCKWELL C = 32 Rc ASTM A829, AMS 6395 receive ft | Firmed | 7/19/18 | 6 ft | 0 ft | 6 ft | \$42.50/ft | \$255.00 |
| Grand Total: | | | | | | | | | | \$3,495.34 | |

Order Notes

Plex 7/4/18 2:12 PM dart.lavoie.chanta

Order Notes

Procurement Quality Clauses

A005 right of entry

A012 chemical and physical test report

A016 personnel qualification

A017 raw material identification (as applicable)

A026 certification of material conformance

A041 quality management system

A042 dart notification by supplier

A043 retention of quality documents

A048 counterfeit parts avoidance, detection, mitigation and disposition program

A049 supplier awareness

Terms & Condition of Purchasing(Suppliers) and Procurement Quality Clauses are an integral part of our AS9100 requirements. To learn in detail, please visit www.dartaerospace.com for further explanation.

Plex 7/4/18 2:12 PM dart.lavoie.chantal

SPECIFICATION:
QQ-A-225/8 OR AMS-QQ-A-225/8 (OR AMS 4117/4128/4115/4116)
OR QQ-A 220/8 OR AMS-QQ-A 210/8 (OR AMS 4120)
OR QQ-A 220/8 OR AMS-QQ-A 210/8 (OR AMS 4120)

QQ-A-225/8 OR AMS-QQ-A-225/8 (OR AMS 4117/4128/4154/416)
OR QQ-A-200/8 OR AMS-QQ-A-200/8 (OR AMS 4160)
OR ASTM B211 OR ASTM B21

M6061T6B | T.TTT | X | www.www

THICK
WIDITH

WHERE "T, TTT" = THICKNESS IN INCHES
"W, WWW" = WIDTH IN INCHES

E.G. 1.0" X 12.0" BAR = M6061T6B1.000X12.000

RELEASED
2009-05-03
APD

MATERIAL RECEIPT INSPECTION FORM

| | |
|---|-------------------------------|
| MATERIAL: <u>M606176180.500x01.250</u> | DATE: <u>18/07/18</u> |
| MATERIAL CERT REC'D: <u>1/05</u> | QUANTITY RECEIVED: <u>20'</u> |
| QUANTITY INSPECTED: <u>20'</u> | QUANTITY REJECTED: <u>0</u> |
| THICKNESS ORDERED: <u>0.500"</u> | |
| THICKNESS RECEIVED: <u>0.500"</u> | |
| SHEET SIZE ORDERED: <u>—</u> | |
| SHEET SIZE RECEIVED: <u>—</u> | |
| PO / BATCH NO.: <u>P0040374/8892911</u> | |

| DESCRIPTION | NCR (Check Y/N) | COMMENTS |
|---|-------------------------------------|------------------|
| SURFACE DAMAGE | <input checked="" type="checkbox"/> | |
| CORRECT FINISH | <input checked="" type="checkbox"/> | |
| CORROSION | <input checked="" type="checkbox"/> | |
| CORRECT GRAIN DIRECTION | <input checked="" type="checkbox"/> | |
| CORRECT MATERIAL PER M-DRAWING | <input checked="" type="checkbox"/> | <u>ASTM A221</u> |
| CORRECT THICKNESS | <input checked="" type="checkbox"/> | |
| PHOTO REQUIRED | <input checked="" type="checkbox"/> | |
| CORRECT REF # TO LINK CERT | <input checked="" type="checkbox"/> | <u>H7.33297</u> |
| CORRECT MATERIAL IDENTIFICATION | <input checked="" type="checkbox"/> | |
| CORRECT # ON THE MATERIAL | <input checked="" type="checkbox"/> | |
| DOES THIS MATERIAL REQUIRE ENGINEERING SIGN OFF | <input checked="" type="checkbox"/> | |
| DOES THIS REQUIRE AN EXTRUSION REPORT | <input checked="" type="checkbox"/> | |

| | | | | | | |
|--|----------------------|------------------------------|-----|-------|-------|---------|
| CUT SAMPLE PIECE OF MATERIAL AND PERFORM A HARDNESS CHECK. | RECORD RESULTS BELOW | HRC | HRB | DUR A | DUR D | WEBSTER |
| TYPE OF MATERIAL | SIZE OF TEST SAMPLE | HARDNESS / DUROMETER READING | | | | |

Testers located in the Quality Office

| | |
|-------------------------|-----------------------------------|
| QC 18 INSPECTION | ENGINEERING SIGNOFF (if required) |
| INSPECTED BY: <u>AT</u> | SIGNED OFF BY: _____ |
| DATE: <u>18/07/18</u> | DATE: _____ |

Attach this inspection sheet with the corresponding material cert and remit to be scanned and received in

2450

FAL-112

48896

10465



Can Do.

Service Center Metals

5850 Quality Way
Prince George, VA 23875

**CERTIFIED INSPECTION REPORT AND TEST RESULTS
FOR EXTRUDED PRODUCTS**



| OUR ORDER NUMBER | ITEM |
|------------------|------|
| 289111 | 11 |

| | | | | | |
|----------------------|----------------|--------------|-------------------|------------------|-----------------------|
| MANIFEST NUMBER | 327862 | DE NUMBER | PL0741 | DATE OF SHIPMENT | 3/30/2017 |
| CUSTOMER PO | C74189 | ALLOY/TEMPER | 6061-T6511 | SALESPERSON | D. Schroeder (Canada) |
| CUSTOMER PART NUMBER | V832661-PL0741 | DESCRIPTION | PL 1.000 x 12.000 | | |
| Quantity Certified | 2,032 lbs | 12 pcs | | | |

| CERTIFICATION |
|-------------------------|
| ASTM-B221-14 No Stencil |
| SPECIFICATION |
| AMS-QQA-200/8 Rev-A |

We hereby certify that the material covered by this report has been inspected in accordance with the most recent certification revision, and has been found to meet the applicable requirements described herein, including any specifications forming a part of the description, and that samples representative of the material met the composition limits and had the mechanical properties shown. Items produced and certified as 6061-T6511 also meet the requirements of 6061-T6. This product is RoHS-2, REACH, and DFARS compliant.

Mechanical Properties

| Tests | Lot No. | Test Date | Ultimate Tensile Strength (KSI) | Yield Strength (KSI) | Percent Elongation |
|-------|-----------|-----------|---------------------------------|------------------------|------------------------|
| 1 | 201704837 | 3/30/17 | min 50.40 max 50.40 | min 46.50 max 46.50 | min 16.60 max 16.60 |

Chemical Composition for Aluminum Alloy 6061

| Cast # | Lot No. | Alloy | Si | Fe | Cu | Mn | Mg | Cr | Zn | Ti | Al | Others | Melt Source: |
|-------------|-----------|-------|------|------|------|------|------|------|------|------|-------|------------|--------------------------|
| 001M170313A | 201704837 | 6061 | 0.75 | 0.38 | 0.33 | 0.10 | 0.89 | 0.10 | 0.07 | 0.03 | 97.36 | Each Total | United States of America |
| | | | | | | | | | | | | | |

Print Date: 3/30/2017

SCM products are melted and extruded in the USA

Calvin J. Wiggins, Director of Quality & Technical Services

Rev. 8/9/16

SPECIFICATION CONTROL DRAWING

PURCHASE MATERIAL 6061-T6/76510/76511/762 ALUMINUM BAR

SPECIFICATION: QQ-A-225/B OR AMS-QQ-A-225/B (OR AMS 417/4128/415/416)
OR QQ-A-200/8 OR AMS-QQ-A-200/8 (OR AMS 4160)
OR ASTM B211 OR ASTM B211

PART NUMBER:

M6061T6B | TTTT | X | WWW.WWW |
THICK | WIDTH

WHERE "TTTT" = THICKNESS IN INCHES
"WWW.WWW" = WIDTH IN INCHES

E.G. 1.0" X 12.0" BAR = M6061T6B1.000X12.000

| | | | | | |
|------------|--|---|--|--------------------|----------|
| REV A | | REMOVE D. A. 25011 (PTON REFORMAT NOTES, ADD ASTM B211 (ZNL "J") | | CP | 09-07-13 |
| DESIGN | | DS | | DN | 01-06-08 |
| DRAWN | | DS | | BY | DATE |
| CHECKED | | DS | | REV B | |
| MFG. APPR. | | M6061T6B | | SHEET 1 OF 1 | |
| APPROVED | | TITLE | | SCALE | |
| DE APPR. | | 6061-T6 BAR | | NTS | |
| DATE | | 09-07-13 | | DART AEROSPACE LTD | |

RELEASED
2009-05-03
JMD

MATERIAL RECEIPT INSPECTION FORM

| | |
|---|-----------------------------------|
| MATERIAL: <u>M6061 T6 B1.000 x 12.000</u> | DATE: <u>18/07/18</u> |
| MATERIAL CERT REC'D: <u>Kes</u> | QUANTITY RECEIVED: <u>12H</u> |
| | QUANTITY INSPECTED: <u>12H</u> |
| | QUANTITY REJECTED: <u>0</u> |
| THICKNESS ORDERED: <u>1.000"</u> | THICKNESS RECEIVED: <u>1.000"</u> |
| | SHEET SIZE ORDERED: <u>—</u> |
| | SHEET SIZE RECEIVED: <u>—</u> |
| PO / BATCH NO.: <u>80040374/5092911</u> | |

| DESCRIPTION | NCR (Check Y/N) | COMMENTS |
|---|---------------------------------------|-----------------------|
| SURFACE DAMAGE | <input checked="" type="checkbox"/> Y | |
| CORRECT FINISH | <input checked="" type="checkbox"/> Y | |
| CORROSION | <input checked="" type="checkbox"/> Y | |
| CORRECT GRAIN DIRECTION | <input checked="" type="checkbox"/> Y | |
| CORRECT MATERIAL PER M-DRAWING | <input checked="" type="checkbox"/> Y | <u>AMS-QQ-A-200/8</u> |
| CORRECT THICKNESS | <input checked="" type="checkbox"/> Y | |
| PHOTO REQUIRED | <input checked="" type="checkbox"/> Y | |
| CORRECT REF # TO LINK CERT | <input checked="" type="checkbox"/> Y | |
| CORRECT MATERIAL IDENTIFICATION | <input checked="" type="checkbox"/> Y | <u>HT-001M170313A</u> |
| CORRECT M# ON THE MATERIAL | <input checked="" type="checkbox"/> Y | |
| DOES THIS MATERIAL REQUIRE ENGINEERING SIGN OFF | <input checked="" type="checkbox"/> Y | |
| DOES THIS REQUIRE AN EXTRUSION REPORT | <input checked="" type="checkbox"/> Y | |

| | | | | |
|--|-----|-------|-------|---------|
| CUT SAMPLE PIECE OF MATERIAL AND PERFORM A HARDNESS CHECK. | | | | |
| RECORD RESULTS BELOW | | | | |
| HRC | HRB | DUR A | DUR D | WEBSTER |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |

Testers located in the Quality Office

| | |
|-------------------------|-----------------------------------|
| DC 18 INSPECTION | ENGINEERING SIGNOFF (if required) |
| INSPECTED BY: <u>AT</u> | SIGNED OFF BY: _____ |
| DATE: <u>18/07/18</u> | DATE: _____ |

Attach this inspection sheet with the corresponding material cert and remit to be scanned and received in

7453

N703

2234

| | | | | |
|-------------|----------|-----------------|-------------------------------|--------------|
| MILL TEST | No: 1726 | Date: 1/23/2018 | ISO 9001/2015 No. 161446 2020 | ALTO SLATINA |
| CERTIFICATE | | | CERTIFIED BRAC-IQNOI | Vimeto |

CUSTOMER :
CONTRACT/ORDER : 2224
BILL OF DELIVERY : 80348517
TRUCK/CONTAINER : MSCU 5764780

MATERIAL : ALUMINIUM PLATES
ALLOY : 6061
LOT/DIMENSIONS (mm): 70190093 1.25'THX48.5'WDX144.5'LT
TEMPER: T651

ACCORDING TO : ASTM B209; AMS 4027N; ANSI H35.2; ASME SB209; AMS-QQ-A-250/11
ACTUAL MECHANICAL PROPERTIES 1 MPa = 1 N/mm² = 0.145 ksi = 0.102 kgf/mm²

| | | | | | |
|-------------------|-----------|-------------------|----|------------------|---|
| 1 lbs = 0.4536 kg | | Specified values: | | Measured values: | |
| UTS | min. max. | 42 | 35 | min. max. | 8 |
| YTS | min. max. | 42 | 35 | min. max. | 8 |
| Elong.% | 50mm | | | | |
| CASE | | LOT / BATCH | | | |
| NET WEIGHT lbs | | 70190093 | | | |

| | | | | |
|---------------------------------|------------------|------|------|------|
| 590199;591435; 591437;592325 | 8,783.224 | 46.9 | 40.4 | 14.5 |
| LOT / BATCH | Measured values: | | | |
| 70190093 | NET WEIGHT lbs | | | |

| ACTUAL CHEMICAL ANALYSIS % | | | | | | | | | | | |
|----------------------------|----------|------|------|-----|------|------|-------|------|-------|-------|-------|
| BATCH | SI | Fe | Cu | Mn | Mg | Cr | NI | Zn | TI | Ga | V |
| S97116567 | 0.61 | 0.39 | 0.26 | 0.1 | 0.89 | 0.18 | 0.000 | 0.12 | 0.021 | 0.011 | 0.018 |
| Max. | 0.4 | 0.7 | 0.15 | | 0.8 | 0.04 | 0.05 | 0.25 | 0.15 | 0.05 | 0.05 |
| Min. | 0.05 | 0.15 | 0.05 | | 0.05 | 0.05 | 0.05 | 0.05 | 0.05 | 0.05 | 0.05 |
| REMARKS: | REMARKS: | | | | | | | | | | |

ACCORDING TO: ASTM B209; AMS 4027N; ANSI H35.2; ASME SB209; AMS-QQ-A-250/11
We hereby certify that the material detailed hereon has been produced and tested according to the requirements of the relevant standards, specification and/or order, keep in dry conditions, without long temperature variations. The differences between test and air must not exceed 11 °C. Please follow the recommendations of the Aluminum Association Guide for manufacturing water stability. Also we certify that ALRO products comply with REACH legislation no. 1831/2003 concerning the Regulation, Evaluation, Authorization and Restriction of Chemicals and CLP legislation no. 1272/2008 on classification, labeling and packaging of substances and mixtures.

QUALITY CONTROL DEPT.
ALRO S.A. No. 118, Pirelli Street, Phone: (40) 0249 435 117; 0249 432 955 alro@alro.ro
230048-Slatina-ROMANIA
Fax: (40) 0249 411 487; 0249 415 932
cod 11/PO-051/Rev.4/2012

SC ALRO SA SLATINA
Punct de lucru Slatina
Str. Micoev Nr.1, Jud. Olt
Serv. Inspecie Calitate

17/11/2018

SPECIFICATION CONTROL DRAWING



PURCHASE MATERIAL 6061-T6/62T651 ALUMINUM SHEET OR PLATE

SPECIFICATION:

QQ-A-250/1 OR AMS-QQ-A-250/1
OR AMS 4025 OR 4027
OR ASTM B209



PART NUMBER:

M6061T6S | XXX | X | W | WWW |
| THK | | WIDTH |

WHERE "XXX" = THICKNESS (IN INCHES)
AND "W, WWW" = WIDTH (IN INCHES, OPTIONAL, FOR SPECIFYING CUT PLATE)

EG. 0.063" THICK SHEET = M6061T6S.063
EG. 3.5" WIDE BY 0.500" THICK PLATE = M6061T6S.500X3.500



PREFERRED SIZE:

.XXX BY 4FT BY 8FT FOR SHEET

RELEASED

2018 MAR 13
EJ 18-606

APPROVED

| | | | |
|---|--|----|----------|
| C | ADD PLATE AND T651 SPEC | ML | 17.12.13 |
| B | REFORMAT DWG, ADD B209 SPEC (ZND8-1), REF PAR 08-020A | CP | 09.07.13 |
| A | NEW ISSUE | RF | 01.06.08 |
| REV | DESCRIPTION | BY | DATE |
| DESIGN | DS | | |
| DRAWN | ML | | |
| CHECKED | NO | | |
| MFG. APPR. | JFS | | |
| APPROVED | HS | | |
| DE APPR. | CP | | |
| DATE | 17.12.13 | | |
| DART AEROSPACE LTD DRAWING NO. M6061T6S HAWKESBURY, ONTARIO, CANADA REV. C SHEET 1 OF 1 SCALE NTS | | | |
| COPYRIGHT © 2001 BY DART AEROSPACE LTD ALL RIGHTS RESERVED THIS DRAWING IS THE PROPERTY OF DART AEROSPACE LTD AND IS NOT TO BE LOANED, REPRODUCED OR COPIED IN ANY MANNER WITHOUT THE WRITTEN PERMISSION OF DART AEROSPACE LTD | | | |

MATERIAL RECEIPT INSPECTION FORM

MATERIAL: (M6061T651. 250x04.500) DATE: 18/02/18

QUANTITY RECEIVED: 85 MATERIAL CERT REC'D: Yes

QUANTITY INSPECTED: 85

QUANTITY REJECTED: 0

THICKNESS ORDERED: 1.25" THICKNESS RECEIVED: 1.25"

SHEET SIZE ORDERED: — SHEET SIZE RECEIVED: —

PO / BATCH NO.: P0040374 / 5092913

| DESCRIPTION | NCR (Check Y/N) | COMMENTS |
|---|---------------------------------------|-----------------|
| SURFACE DAMAGE | <input checked="" type="checkbox"/> Y | |
| CORRECT FINISH | <input checked="" type="checkbox"/> Y | |
| CORROSION | <input checked="" type="checkbox"/> Y | |
| CORRECT GRAIN DIRECTION | <input checked="" type="checkbox"/> Y | |
| CORRECT MATERIAL PER M-DRAWING | <input checked="" type="checkbox"/> Y | AMS-22-A-250/11 |
| CORRECT THICKNESS | <input checked="" type="checkbox"/> Y | |
| PHOTO REQUIRED | <input checked="" type="checkbox"/> Y | |
| CORRECT REF # TO LINK CERT | <input checked="" type="checkbox"/> Y | |
| CORRECT MATERIAL IDENTIFICATION | <input checked="" type="checkbox"/> Y | MT=537116567 |
| CORRECT M# ON THE MATERIAL | <input checked="" type="checkbox"/> Y | |
| DOES THIS MATERIAL REQUIRE ENGINEERING SIGN OFF | <input checked="" type="checkbox"/> Y | |
| DOES THIS REQUIRE AN EXTRUSION REPORT | <input checked="" type="checkbox"/> Y | |

| |
|--|
| CUT SAMPLE PIECE OF MATERIAL AND PERFORM A HARDNESS CHECK. |
| RECORD RESULTS BELOW |
| HRC |
| HRB |
| DUR A |
| DUR D |
| WEBSTER |

Testers located in the Quality Office

QC 18 INSPECTION

ENGINEERING SIGNOFF (if required)

INSPECTED BY: AT

SIGNED OFF BY: _____

DATE: 18/02/18

Attach this inspection sheet with the corresponding material cert and remit to be scanned and received in

2445

FAI-1123

51350

712A 2347



GLOBAL VIETNAM ALUMINIUM CO., LTD

Address: MY XUAN BI-CONAC INDUSTRIAL ZONE, MY XUAN TOWN, TAN THUANH DISTRICT,
BA RIA VUNG TAU PROVINCE, VIET NAM
Tel: +84(0)643924954
Fax: +84(0)643924953

MILL TEST CERTIFICATE

Date: April 26th, 2018

PO number: P-18057

Shipping Ref No.: 18-0817

I/C No.: DC HMN811301

Date of Issue: April 10, 2018

Item Code: 1931000

Die Number: D00141

Alloy & Temper: 6061-T6

Production Description: ALUMINIUM EXTRUDED PROFILES

Flat Bar 1.5" x 3" x 240" 6061-T6 D00141

Length (inch): 240

Bundle number: P-18057-008, P-18057-007

Heat Number: SXE180264

Date: 01/03/2018

Applicable Specifications: ASTM B221 STANDARDS

CHEMICAL ANALYSIS: %

| Si | Mg | Fe | Cu | Mn | Cr | Zn | Ti | Al | Other | Remark: |
|----------------------|-------|-------|-------|-------|-------|-------|-------|--------|-------|------------|
| 0.598 | 0.900 | 0.211 | 0.251 | 0.016 | 0.096 | 0.033 | 0.019 | 98.282 | <0.05 | 26/02/2018 |
| MECHANICAL ANALYSIS: | | | | | | | | | | |
| Elongation % LN 2" | | | | | | | | | | Remark: |
| Yield Strength (ksi) | | | | | | | | | | |
| 38.6 | | | | | | | | | | 26/02/2018 |

All profiles, showing material shipped match aluminium alloy as per standard, with chemical analysis to match aluminium alloy standard.
We hereby certify that the item listed have been checked and tested in accordance with the specifications noted and have been found to meet all the applicable requirements. Certifications are kept on file for 36 months from the date of purchase and are available for review upon request, referring to ASTM and the PO number.

Quality Manager



TRUNG TÂM KIỂM NGHIỆM CÔNG TY
THANH HOÀNG VÀ CÔNG TY
GLOBAL VIETNAM ALUMINIUM
CO., LTD TESTING CENTER

SPECIFICATION CONTROL DRAWING

PURCHASE MATERIAL: 6061-T6/T651/T6510/T6511/T62 ALUMINUM BAR
 SPECIFICATION: QQ-A-225/8 OR AMS-QQ-A-225/8 (OR AMS 4117/4128/415/416)
 OR QQ-A-200/8 OR AMS-QQ-A-200/8 (OR AMS 4160)
 OR ASTM B211 OR ASTM B221

PART NUMBER:

M6061T6B | T.TT | X | WW.WWW |
 THICK | WIDTH

WHERE "T.TT" = THICKNESS IN INCHES
 "WW.WWW" = WIDTH IN INCHES

E.G. 1.0" X 12.0" BAR = M6061T6B1.000X12.000

RELEASED
 2009-05-03
MP

| | | | | | |
|--|-------------|--|------|----|----------|
| B | | REMOVE QD A.250(1) OPTION, REFORMA/ NOTE S. AND ASTM B211B211 (2N D7-1) | | CP | 09 07 13 |
| A | | NEW ISSUE | | DS | 01 06 03 |
| REV | DESCRIPTION | BY | DATE | | |
| DESIGN | DS | | | | |
| DRAWN | MP | DART AEROSPACE LTD | | | |
| CHECKED | AS | DRAWING NO | | | |
| MFG. APPR. | MP | HAWKE SQUIRY, ONTARIO, CANADA | | | |
| APPROVED | MP | TITLE | | | |
| DE APPR. | MP | M6061T6B | | | |
| DATE | 09 07 13 | 6061-T6 BAR | | | |
| COPYRIGHT © 2001 BY DART AEROSPACE LTD | | | | | |
| REV. B | | | | | |
| SHEET 1 OF 1 | | | | | |
| SCALE | | | | | |
| NTS | | | | | |

Attach this inspection sheet with the corresponding material cert and remit to be scanned and received in

| | |
|----------------------------------|-----------------------------------|
| OC 18 INSPECTION | ENGINEERING SIGNOFF (if required) |
| INSPECTED BY: <u>[Signature]</u> | SIGNED OFF BY: _____ |
| DATE: <u>18/07/18</u> | DATE: _____ |

Testers located in the Quality Office

| | | | | | |
|--|-----|-----|-------|-------|---------|
| TYPE OF MATERIAL SIZE OF TEST SAMPLE HARDNESS / DUROMETER READING | HRC | HRB | DUR A | DUR D | WEBSTER |
| | | | | | |
| | | | | | |
| | | | | | |
| CUT SAMPLE PIECE OF MATERIAL AND PERFORM A HARDNESS CHECK. RECORD RESULTS BELOW | | | | | |

| | | | | | |
|-------------|-----------------------|----------|--|---------------------------------------|----------------------------|
| DESCRIPTION | NCR (Check Y/N) | COMMENTS | SURFACE DAMAGE | <input checked="" type="checkbox"/> Y | <input type="checkbox"/> N |
| | | | CORRECT FINISH | <input checked="" type="checkbox"/> Y | <input type="checkbox"/> N |
| | | | CORROSION | <input checked="" type="checkbox"/> Y | <input type="checkbox"/> N |
| | | | CORRECT GRAIN DIRECTION | <input checked="" type="checkbox"/> Y | <input type="checkbox"/> N |
| | | | CORRECT MATERIAL PER M-DRAWING | <input checked="" type="checkbox"/> Y | <input type="checkbox"/> N |
| | | | CORRECT THICKNESS | <input checked="" type="checkbox"/> Y | <input type="checkbox"/> N |
| | | | PHOTO REQUIRED | <input checked="" type="checkbox"/> Y | <input type="checkbox"/> N |
| | | | CORRECT REF # TO LINK CERT | <input checked="" type="checkbox"/> Y | <input type="checkbox"/> N |
| | | | CORRECT MATERIAL IDENTIFICATION | <input checked="" type="checkbox"/> Y | <input type="checkbox"/> N |
| | | | CORRECT # ON THE MATERIAL | <input checked="" type="checkbox"/> Y | <input type="checkbox"/> N |
| | | | DOES THIS MATERIAL REQUIRE ENGINEERING SIGN OFF | <input checked="" type="checkbox"/> Y | <input type="checkbox"/> N |
| | | | DOES THIS REQUIRE AN EXTRUSION REPORT | <input checked="" type="checkbox"/> Y | <input type="checkbox"/> N |

| | |
|--|----------------------------------|
| MATERIAL: <u>M6061 T681.500x3.000</u> | DATE: <u>18/07/18</u> |
| MATERIAL CERT REC'D: <u>6'</u> | QUANTITY CERT REC'D: <u>6'</u> |
| QUANTITY RECEIVED: <u>6'</u> | QUANTITY INSPECTED: <u>6'</u> |
| QUANTITY REJECTED: <u>0</u> | QUANTITY REJECTED: <u>0</u> |
| THICKNESS ORDERED: <u>1.500</u> | THICKNESS RECEIVED: <u>1.500</u> |
| SHEET SIZE ORDERED: <u>—</u> | SHEET SIZE RECEIVED: <u>—</u> |
| PO / BATCH NO.: <u>0040374/5092914</u> | |

MATERIAL RECEIPT INSPECTION FORM

LIBRERÍA S.A.

48490 UGAO-MIRAVALLS/VIZCAYA (SPAIN)
Tfno.: 945480711

De acuerdo a /Made according to:

EN 10204/DIN 50049

3.1

CERTIFICADO DE CALIDAD/QUALITY REPORT

| | | | | |
|---------|-------|---------|---------------------------------|------------|
| ALBARAN | 46814 | CLIENTE | LES ACIERS TRANSBEC (1997) LTÉE | (CUSTOMER) |
|---------|-------|---------|---------------------------------|------------|

7701 NE : 7701

Productos Calibrados de acero, Condiciones técnicas de suministro.

Bright steel products. Technical delivery conditions.

PRODUCTO SOLICITADO : PRODUCT ACCORDING ASTM A 108

| Nº PRIMARIO | Descripción | DETERMINACION | IMPORTE | IMPORTE |
|-------------|-----------------------------------|---------------|---------|---------|
| OU-47016 | 1018 RED TORNEADO 88,50 (3 1/2) | 1.206 | -0.102 | 137513 |
| V1-46700 | 1018 RED ESTRADO 34,93 (1 3/8) | 1.044 | -0.051 | 137992 |
| MJP-47224 | 1018 RED TORNEADO 74,61 (2 13/16) | 1.018 | -0.102 | 137999 |
| PAR-47152 | 1018 RED ESTRADO 38,10 (1 1/2) | 1.048 | -0.051 | 138232 |
| CA-46388 | 1018 RED ESTRADO 49,21 (1 15/16) | 1.078 | -0.076 | 138734 |
| CA-46391 | 1018 RED ESTRADO 38,10 (1 1/2) | 1.050 | -0.051 | 138324 |
| PAR-47472 | 1018 RED ESTRADO 34,93 (1 3/8) | 996 | -0.051 | 138426 |
| PAR-47472 | 1018 RED TORNEADO 87,31 (3 1/16) | 1.046 | -0.051 | 138488 |
| PAJ-47284 | 1018 RED ESTRADO 38,10 (1 1/2) | 1.418 | -0.102 | 138489 |
| CA-46394 | 1018 RED ESTRADO 50,80 (2) | 1.104 | -0.051 | 138518 |
| OU-47424 | 1018 RED ESTRADO 38,10 (1 1/2) | 1.174 | -0.076 | 138621 |
| OU-47424 | 1018 RED ESTRADO 44,45 (1 3/4) | 926 | -0.076 | 138628 |
| OU-47424 | 1018 RED ESTRADO 60,33 (2 3/8) | 1.108 | -0.076 | 138630 |
| MJP-47504 | 1018 RED ESTRADO 55,56 (2 3/16) | 1.054 | -0.076 | 138647 |
| AQM-46896 | 1018 RED ESTRADO 55,56 (2 3/16) | 1.172 | -0.076 | 138702 |
| AQM-46896 | 1018 RED TORNEADO 76,20 (3) | 1.106 | -0.102 | 138703 |
| AQM-46896 | 1018 RED ESTRADO 34,93 (1 3/8) | 992 | -0.051 | 138700 |
| VI-47383 | 1018 RED ESTRADO 61,91 (2 1/16) | 1.076 | -0.076 | 138701 |
| PAJ-47709 | 1018 RED ESTRADO 33,54 (1 5/16) | 1.836 | -0.076 | 138937 |
| | | 948 | -0.051 | 138959 |

Composición química de la colada / Chemical Analysis of Head

| MEBIDA | OF | COLADA | (Last Nr. | C | Mn | P | S | % | % |
|--------|------|--------|-----------|-------|-------|-------|-------|-------|-------|
| 88.90 | 0.00 | 137513 | 41051 IS | 0.170 | 0.700 | 0.013 | 0.030 | 0.300 | 0.300 |
| 74.61 | 0.00 | 137992 | 41007 IS | 0.160 | 0.690 | 0.012 | 0.024 | 0.310 | 0.310 |
| 18.10 | 0.00 | 138232 | 40660 IS | 0.170 | 0.700 | 0.013 | 0.030 | 0.300 | 0.300 |
| 49.21 | 0.00 | 138234 | 41150 IS | 0.160 | 0.680 | 0.013 | 0.022 | 0.300 | 0.300 |
| 38.10 | 0.00 | 138324 | 40660 IS | 0.160 | 0.690 | 0.011 | 0.031 | 0.310 | 0.310 |
| 38.10 | 0.00 | 138426 | 41007 IS | 0.160 | 0.690 | 0.012 | 0.024 | 0.310 | 0.310 |
| 38.10 | 0.00 | 138488 | 41055 IS | 0.160 | 0.690 | 0.012 | 0.024 | 0.310 | 0.310 |
| 87.31 | 0.00 | 138489 | 41051 IS | 0.170 | 0.700 | 0.013 | 0.030 | 0.300 | 0.300 |
| 38.10 | 0.00 | 138518 | 41055 IS | 0.160 | 0.690 | 0.012 | 0.024 | 0.310 | 0.310 |
| 38.10 | 0.00 | 138628 | 41055 IS | 0.170 | 0.690 | 0.011 | 0.024 | 0.310 | 0.310 |
| 44.45 | 0.00 | 138629 | 40006 A | 0.164 | 0.658 | 0.008 | 0.027 | 0.184 | 0.310 |
| 35.56 | 0.00 | 138647 | 39183 A | 0.165 | 0.725 | 0.018 | 0.026 | 0.169 | 0.169 |
| 55.56 | 0.00 | 138702 | 39183 A | 0.165 | 0.725 | 0.018 | 0.026 | 0.169 | 0.169 |
| 76.20 | 0.00 | 138703 | 41121 IS | 0.170 | 0.700 | 0.013 | 0.030 | 0.300 | 0.300 |

CERTIFICADO DE CALIDAD/QUALITY REPORT

De acuerdo a / Made according to:

EN 10204/DIN 50049

3.1

| | | | | |
|---------|-------|---------|---------------------------------|----------|
| ALBARAN | 46814 | CLIMATE | LES ACIERS TRANSBEC (1997) LTÉE | CUSTOMER |
|---------|-------|---------|---------------------------------|----------|

Productos Calibrados de acero. Condiciones técnicas de suministro.

44427

Bright steel products. Technical delivery conditions.

| C | % | Mm | P | % | \$ | % | \$ |
|----------|----------|-------|-------|-------|-------|-------|-------|
| 41007 IS | 0,160 | 0,690 | 0,012 | 0,024 | 0,310 | 34,93 | 0,00 |
| 138700 | 41007 IS | 0,160 | 0,690 | 0,012 | 0,024 | 0,310 | 34,93 |
| 138701 | 41150 IS | 0,170 | 0,690 | 0,011 | 0,031 | 0,310 | 50,80 |
| 138937 | 41215 IS | 0,170 | 0,690 | 0,012 | 0,030 | 0,300 | 61,91 |
| 138959 | 41007 IS | 0,160 | 0,690 | 0,012 | 0,024 | 0,310 | 53,34 |

Characteristics mechanical / Mechanical properties

| MEDIDA | Measurement |
|-----------|--|
| OF | Casi Nr. |
| COLADA | Tens strength N/mm ² |
| | Yield stress 0.2% N/mm ² |
| | Elongation L _o =50 mm. |
| Dureza HB | Hardness HHD |

Calidad Superficial

| DESCRIPTION | OF | Class |
|-------------|----|------------|
| | | EN 10277-1 |

(*) INCLUYE: BARRAS DE ACERO ESTIRADAS / TORNEADAS EN FRIO SIN ALIAR



ARANA Y LUPARDO, 2
48490 UGAO-MIRAVALLLES/VIZCAYA (SPAIN)
Tfno.: 946480211
Fax: 946480128
Email: calpradera@calibradospradera.es
www.calibradospradera.es

CERTIFICADO DE CALIDAD/QUALITY REPORT

De acuerdo a /Made according to:

EN 10204/DIN 50049

3.1

| | | | |
|-------------------|-------|----------|--------------------------------|
| ALBARAN | 46814 | CLIENTE | LES ACTERS TRANSBEC (1997) LTB |
| Delivery Note Nr. | | CUSTOMER | |

Nº CERTIFICADO / CERTIFICATE NR.: 46814

Norma : EN 10277

Productos Calibrados de acero. Condiciones técnicas de suministro.

Norma : EN 10277

DEPARTAMENTO DE CALIDAD: Certifica que el mencionado producto cumple con las especificaciones del pedido.

QUALITY DEPARTMENT: Certify that the product fulfils the order specifications.

Fecha/Date: 07/04/2017

Firmado: Susana Fernández
Directora de Calidad



System de
Gestión de
ISO 9001:2008
www.transbec.es
EN 10204

SPECIFICATION CONTROL DRAWING

PURCHASE MATERIAL: AISI 1018-1025 ROUND BAR

SPECIFICATION:

MIL-S-7097 OR ASTM A108

PART NUMBER:

M1018-R/D DDD WHERE D DDD = DIAMETER IN INCHES
DIA.

EG 7/8" ROUND BAR = M1018-R/D 875

TOLERANCES:

PER ASTM A108 AS FOLLOWS:

| SIZE | TOLERANCE |
|-------------------------|---------------|
| UP TO 1.5" INCL. | +0.000/-0.002 |
| OVER 1.5" TO 2.5" INCL. | +0.000/-0.003 |
| OVER 2.5" TO 4.0" INCL. | +0.000/-0.004 |
| OVER 4.0" TO 6.0" INCL. | +0.000/-0.005 |
| OVER 6.0" TO 8.0" INCL. | +0.000/-0.006 |

1018-1025
2012-09-24
M1018-R

| | | | |
|--|-------------|----|----------|
| B REFORMAT ADD ASTM A108, ADD TOLERANCES | | CP | 12-09-05 |
| A NEW ISSUE | | CP | 01-06-12 |
| REV | DESCRIPTION | BY | DATE |
| DESIGN | DS | | |
| DRAWN | CP | | |
| CHECKED | | | |
| MFG. APPR. | | | |
| APPROVED | | | |
| DATE | 12-09-05 | | |

DART AEROSPACE LTD
 HAWKESBURY, ONTARIO, CANADA
 DRAWING NO. M1018-R
 TITLE 1018-1025 ROUND BAR
 REV. B
 SHEET 1 OF 1
 SCALE NTS
 COPYRIGHT © 2012 DART AEROSPACE LTD

Attach this inspection sheet with the corresponding material cert and remit to be scanned and received in

| | |
|-------------------------|-----------------------------------|
| QC 18 INSPECTION | ENGINEERING SIGNOFF (if required) |
| INSPECTED BY: <u>AT</u> | SIGNED OFF BY: _____ |
| DATE: <u>18/07/18</u> | DATE: _____ |

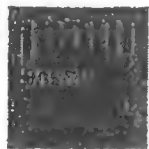
| | | | | |
|--|-----|-------|-------|---------|
| CUT SAMPLE PIECE OF MATERIAL AND PERFORM A HARDNESS CHECK. | | | | |
| RECORD RESULTS BELOW | | | | |
| HRC | HRB | DUR A | DUR D | WEBSTER |
| TYPE OF MATERIAL | | | | |
| SIZE OF TEST SAMPLE | | | | |
| HARDNESS / DUROMETER READING | | | | |

Testers located in the Quality Office

| DESCRIPTION | NCR (Check Y/N) | COMMENTS |
|---|---------------------------------------|----------|
| SURFACE DAMAGE | <input checked="" type="checkbox"/> Y | |
| CORRECT FINISH | <input checked="" type="checkbox"/> Y | |
| CORROSION | <input checked="" type="checkbox"/> Y | |
| CORRECT GRAIN DIRECTION | <input checked="" type="checkbox"/> Y | |
| CORRECT MATERIAL PER M-DRAWING | <input checked="" type="checkbox"/> Y | |
| CORRECT THICKNESS | <input checked="" type="checkbox"/> Y | |
| PHOTO REQUIRED | <input checked="" type="checkbox"/> Y | |
| CORRECT REF # TO LINK CERT | <input checked="" type="checkbox"/> Y | |
| CORRECT MATERIAL IDENTIFICATION | <input checked="" type="checkbox"/> Y | |
| CORRECT # ON THE MATERIAL | <input checked="" type="checkbox"/> Y | |
| DOES THIS MATERIAL REQUIRE ENGINEERING SIGN OFF | <input checked="" type="checkbox"/> Y | |
| DOES THIS REQUIRE AN EXTRUSION REPORT | <input checked="" type="checkbox"/> Y | |

| | |
|--|-----------------------------------|
| MATERIAL: <u>M1018R1375</u> | DATE: <u>18/07/18</u> |
| MATERIAL CERT REC'D: <u>16</u> | QUANTITY RECEIVED: <u>15'</u> |
| | QUANTITY INSPECTED: <u>15'</u> |
| | QUANTITY REJECTED: <u>0</u> |
| THICKNESS ORDERED: <u>1.375"</u> | THICKNESS RECEIVED: <u>1.375"</u> |
| | SHEET SIZE ORDERED: <u>—</u> |
| | SHEET SIZE RECEIVED: <u>—</u> |
| PO / BATCH NO.: <u>P0040374/50922915</u> | |

MATERIAL RECEIPT INSPECTION FORM



COLD FINISHED
FLAT BARS

Pd. Ind. Desarte S.N.
20720 Azkoitia (Gipuzkoa)
Spain
www.nuevaincoal.com
CERVAH ESAM4115350

Admin. y Finanzas / Accounts
Tel: (+34) 948 667 311
Fax: (+34) 943 061 312
nuevaincoal@nuevaincoal.com

Comercial
Tel: (+34) 948 251 712
Fax: (+34) 948 264 626
mandadoc@nuevaincoal.com

50436

42A-2426

#2727

CERTIFICADO DE CALIDAD

Destinatario:

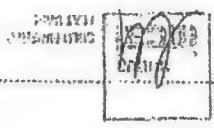
LES ACIERES TRANSBEC
COLD ROLL SAB 1018 ACCORDING TO ASTM A108

CERTIFICAMOS:

Que el material suministrado con cargo a los pedidos de referencia y amparado por nuestro albarán N° EXA.773 y f.m. N° PV17/286 de acuerdo con la norma EN 10204 / 2.2;

| S/Pedidos N° | MATERIAL | CALIDAD | COLADA | Composición Química de la colada | | | | | | | | | | Caract. mecánicas laminado | |
|--------------|-----------|---------|--------|----------------------------------|------|------|-------|-------|--------|--------|-------|---|---|----------------------------|--|
| | | | | C. | Mn. | Si. | S. | F. | Re | N/mm2 | Rm | A | % | | |
| MN-47089 | 5 X 3/8 | | 171108 | 0.15 | 0.77 | 0.14 | 0.002 | 0.016 | 554.00 | 580.00 | 12.00 | | | | |
| MN-47093 | 2 X 1/4 | | 590449 | 0.16 | 0.76 | 0.20 | 0.011 | 0.017 | 329.00 | 495.00 | 39.00 | | | | |
| MN-47093 | 5 X 3/8 | | 171108 | 0.15 | 0.77 | 0.14 | 0.002 | 0.016 | 554.00 | 580.00 | 12.00 | | | | |
| MN-47093 | 6 X 3/4 | | 170723 | 0.17 | 0.75 | 0.19 | 0.002 | 0.021 | 553.00 | 580.00 | 14.00 | | | | |
| OU-48311 | 2 X 3/4 | FOR 342 | 171454 | 0.16 | 0.73 | 0.19 | 0.005 | 0.017 | 307.26 | 446.12 | 26.18 | | | | |
| OU-48311 | 3 X 3/4 | FOR 343 | 171455 | 0.15 | 0.70 | 0.16 | 0.005 | 0.017 | 328.17 | 455.80 | 24.31 | | | | |
| OU-48311 | 3 X 1 | FOR 13 | 171456 | 0.15 | 0.70 | 0.19 | 0.004 | 0.019 | 319.60 | 453.88 | 26.57 | | | | |
| OU-48311 | 4 X 1/2 | FOR 124 | 171428 | 0.16 | 0.81 | 0.18 | 0.011 | 0.017 | 315.61 | 448.72 | 26.44 | | | | |
| PAJ-48098 | 2 X 1/2 | | 171444 | 0.17 | 0.79 | 0.19 | 0.007 | 0.016 | 313.22 | 462.60 | 24.10 | | | | |
| PAJ-48098 | 3 X 3/8 | | 171438 | 0.19 | 0.80 | 0.24 | 0.008 | 0.017 | 325.45 | 455.76 | 24.91 | | | | |
| PAJ-48098 | 3 X 3/4 | | 171455 | 0.15 | 0.70 | 0.16 | 0.005 | 0.017 | 328.17 | 455.80 | 24.31 | | | | |
| PAJ-48098 | 3 X 1-1/2 | | 170400 | 0.16 | 0.79 | 0.18 | 0.004 | 0.016 | 328.17 | 455.80 | 24.31 | | | | |
| PAJ-48098 | 6 X 1/2 | | 171612 | 0.16 | 0.82 | 0.20 | 0.004 | 0.018 | 550.00 | 576.00 | 13.00 | | | | |
| PAJ-48098 | 6 X 1 | | 170932 | 0.17 | 0.75 | 0.16 | 0.005 | 0.019 | 557.00 | 585.00 | 14.00 | | | | |
| PAR-48178 | 8 X 3/4 | | 162602 | 0.18 | 0.79 | 0.16 | 0.003 | 0.012 | 558.00 | 586.00 | 14.00 | | | | |
| PAR-48178 | 2 X 3/16 | | 54305 | 0.15 | 0.70 | 0.18 | 0.036 | 0.011 | 348.00 | 481.00 | 32.70 | | | | |
| PAR-48178 | 6 X 1/2 | | 171612 | 0.16 | 0.82 | 0.20 | 0.004 | 0.018 | 550.00 | 576.00 | 13.00 | | | | |

Cordelia (SPAIN), 11 de Septiembre de 2.017
Responsable de Calidad



SPECIFICATION CONTROL DRAWING

PURCHASE MATERIAL: AISI 1018/1025 ROUND BAR

SPECIFICATION:

MIL-S-7097 OR ASTM A108

PART NUMBER:

M1018-R/D DDD WHERE D DDD = DIAMETER IN INCHES
DIA.

EG. 7/8" ROUND BAR = M1018-R0.875

TOLERANCES:

PER ASTM A108 AS FOLLOWS:

| SIZE | TOLERANCE |
|-------------------------|---------------|
| UP TO 1.5" INCL. | +0.000/-0.002 |
| OVER 1.5" TO 2.5" INCL. | +0.000/-0.003 |
| OVER 2.5" TO 4.0" INCL. | +0.000/-0.004 |
| OVER 4.0" TO 6.0" INCL. | +0.000/-0.005 |
| OVER 6.0" TO 8.0" INCL. | +0.000/-0.006 |

1018-R0.875
2012-09-24

| | | | |
|---|---------------------------------------|----|----------|
| R | REFORMAT ADD ASTM A108 ADD TOLERANCES | CP | 12.09.05 |
| A | NEW ISSUE | DS | 01.06.12 |
| REV | DESCRIPTION | BY | DATE |
| DESIGN | DS | | |
| DRAWN | CP | | |
| CHECKED | 9.2 | | |
| MFG. APPR. | | | |
| APPROVED | | | |
| DE APPR. | | | |
| DATE | 12.09.05 | | |
| <p>1018-1025 ROUND BAR</p> <p>DART AEROSPACE LTD</p> <p>HAWKESBURY, ONTARIO, CANADA</p> <p>DRAWING NO. M1018-R</p> <p>TITLE</p> <p>SHEET 1 OF 1</p> <p>SCALE</p> <p>NIS</p> | | | |

MATERIAL RECEIPT INSPECTION FORM

| | |
|---|-----------------------------------|
| MATERIAL: <u>M101861.000 X 03.000</u> | DATE: <u>18/02/18</u> |
| QUANTITY RECEIVED: <u>12'</u> | QUANTITY INSPECTED: <u>12'</u> |
| QUANTITY REJECTED: <u>0</u> | |
| MATERIAL CERT REC'D: <u>125</u> | |
| THICKNESS ORDERED: <u>1.000"</u> | THICKNESS RECEIVED: <u>1.000"</u> |
| SHEET SIZE ORDERED: <u>—</u> | SHEET SIZE RECEIVED: <u>—</u> |
| PO / BATCH NO.: <u>P0040374/5092916</u> | |

| DESCRIPTION | NCR (Check Y/N) | COMMENTS |
|---|------------------------------------|------------|
| SURFACE DAMAGE | <input checked="" type="radio"/> Y | |
| CORRECT FINISH | <input checked="" type="radio"/> Y | |
| CORROSION | <input checked="" type="radio"/> Y | |
| CORRECT GRAIN DIRECTION | <input checked="" type="radio"/> Y | |
| CORRECT MATERIAL PER M-DRAWING | <input checked="" type="radio"/> Y | ASTM A108 |
| CORRECT THICKNESS | <input checked="" type="radio"/> Y | |
| PHOTO REQUIRED | <input checked="" type="radio"/> Y | |
| CORRECT REF # TO LINK CERT | <input checked="" type="radio"/> Y | MT: 171456 |
| CORRECT MATERIAL IDENTIFICATION | <input checked="" type="radio"/> Y | |
| CORRECT M# ON THE MATERIAL | <input checked="" type="radio"/> Y | |
| DOES THIS MATERIAL REQUIRE ENGINEERING SIGN OFF | <input checked="" type="radio"/> Y | |
| DOES THIS REQUIRE AN EXTRUSION REPORT | <input checked="" type="radio"/> Y | |

| | | | | |
|--|-----|-------|-------|---------|
| CUT SAMPLE PIECE OF MATERIAL AND PERFORM A HARDNESS CHECK. | | | | |
| RECORD RESULTS BELOW | | | | |
| HRC | HRB | DUR A | DUR D | WEBSTER |
| TYPE OF MATERIAL | | | | |
| SIZE OF TEST SAMPLE | | | | |
| HARDNESS / DUROMETER READING | | | | |
| | | | | |
| | | | | |
| | | | | |

| | |
|-------------------------|-----------------------------------|
| QC 18 INSPECTION | ENGINEERING SIGNOFF (if required) |
| INSPECTED BY: <u>MT</u> | SIGNED OFF BY: _____ |
| DATE: <u>18/02/18</u> | DATE: _____ |

Attach this inspection sheet with the corresponding material cert and remit to be scanned and received in

4262

FEAL-18-V5052

51621

17923

浙江永杰铝业有限公司

Zhejiang Yongjie Aluminum Co., Ltd.

Jiangdong Industrial Area, Xiaoshan Economic and Technology Development Zone, Hangzhou, 311222, China

MILL TEST

To:
EMPIRE RESOURCES, INC.
2116 LINWOOD AVENUE, FORT LEE, NEW JERSEY 07024, USA
TEL: 201.944.2200 X 1231 FAX: 201.944.2226Invoice No.: YJ170820-2
Date: JUNE 20, 2017

SHIPPING MARKS: N/M

| Packag e No. | P O No. | Heat Number | Alloy/ Temper | Specification | Actual Thickn ess | N.W. (MT) | G.W. (MT) | CHEMICAL COMPOSITION, % | | | | | | | | | | | MECHANICAL PROPERTIES | | |
|-----------------|---------|--------------|---------------|-----------------|-------------------------|--------------|--------------|-------------------------|-------|-------|-------|-------|----|-------|-------|-------|-------|---------------|--------------------------|--------------------|--|
| | | | | | | | | Si | Fe | Cu | Mn | Mg | Ni | Zn | Ti | Cr | Al | T.S. (KSI) | Yield (KSI) | Elongat ion (%) | |
| 519-5 | R154287 | 217080011-2 | AA6052 H32 | 0.125"X60"X144" | 0.125 | 2.166 | 2.264 | 0.100 | 0.280 | 0.010 | 0.070 | 2.480 | - | 0.009 | 0.011 | 0.170 | 96.82 | 32.6 | 24.9 | 10.5 | |
| 519-6 | R154271 | 017050984-4 | AA3003 H14 | 0.126"X60"X144" | 0.124 | 2.111 | 2.210 | 0.200 | 0.540 | 0.080 | 1.040 | 0.010 | - | - | 0.024 | - | 98.10 | 22.2 | 19.0 | 13.5 | |
| 519-7 | R154271 | 017050984-3 | AA3003 H14 | 0.125"X60"X144" | 0.124 | 2.114 | 2.214 | 0.200 | 0.540 | 0.080 | 1.040 | 0.010 | - | - | 0.024 | - | 98.10 | 22.2 | 19.0 | 13.5 | |
| 520-1 | R154177 | 017051163-2 | AA3003 H14 | 0.036"X48"XC | 0.035 | 4.636 | 4.710 | 0.240 | 0.520 | 0.070 | 1.040 | 0.010 | - | - | 0.030 | - | 98.09 | 22.2 | 19.9 | 5.0 | |
| 520-2 | R154286 | 017050974-2 | AA3003 H14 | 0.050"X60"XC | 0.050 | 4.480 | 4.584 | 0.190 | 0.520 | 0.080 | 1.050 | 0.010 | - | - | 0.030 | - | 98.12 | 21.9 | 20.7 | 5.0 | |
| 520-3 | R154286 | 017051311-1 | AA3003 H14 | 0.050"X48"XC | 0.049 | 4.652 | 4.718 | 0.200 | 0.540 | 0.090 | 1.060 | 0.010 | - | - | 0.034 | - | 98.06 | 22.9 | 20.3 | 6.5 | |
| 520-4 | R154286 | 017050934-1 | AA3003 H14 | 0.040"X60"XC | 0.039 | 4.645 | 4.712 | 0.240 | 0.550 | 0.100 | 1.080 | 0.020 | - | - | 0.027 | - | 97.98 | 22.2 | 18.7 | 4.5 | |
| 520-5 | R154276 | 7101705181-2 | AA5052 H32 | 0.125"X48"X96" | 0.124 | 1.766 | 1.830 | 0.100 | 0.300 | 0.010 | 0.010 | 2.490 | - | 0.004 | 0.010 | 0.210 | 96.86 | 33.2 | 24.7 | 10.5 | |
| 520-6 | R154276 | 7101705181-1 | AA5052 H32 | 0.125"X48"X96" | 0.124 | 1.789 | 1.848 | 0.100 | 0.300 | 0.010 | 0.010 | 2.490 | - | 0.004 | 0.010 | 0.210 | 96.86 | 33.2 | 24.7 | 10.5 | |
| 520-7 | R154276 | 7101705181-4 | AA5052 H32 | 0.125"X48"X96" | 0.124 | 1.760 | 1.830 | 0.100 | 0.300 | 0.010 | 0.010 | 2.490 | - | 0.004 | 0.010 | 0.210 | 96.86 | 33.2 | 24.7 | 10.5 | |
| 520-8 | R154278 | 7101705181-5 | AA5052 H32 | 0.125"X48"X96" | 0.124 | 1.665 | 1.732 | 0.100 | 0.300 | 0.010 | 0.010 | 2.480 | - | 0.004 | 0.010 | 0.210 | 96.86 | 33.2 | 24.7 | 10.5 | |
| 521-1 | R154284 | 017051182-2 | AA3003 H14 | 0.050"X48"XC | 0.050 | 4.656 | 4.714 | 0.220 | 0.540 | 0.090 | 1.080 | 0.010 | - | - | 0.030 | - | 98.03 | 22.2 | 18.1 | 5.0 | |
| 521-2 | R154284 | 017050981-2 | AA3003 H14 | 0.050"X60"XC | 0.050 | 4.674 | 4.750 | 0.210 | 0.560 | 0.080 | 1.060 | 0.010 | - | - | 0.024 | - | 98.05 | 22.2 | 19.3 | 6.0 | |
| 521-3 | R154284 | 017050981-1 | AA3003 H14 | 0.050"X60"XC | 0.050 | 4.660 | 4.634 | 0.210 | 0.560 | 0.080 | 1.060 | 0.010 | - | - | 0.024 | - | 98.05 | 22.2 | 19.3 | 8.0 | |
| 521-4 | R154284 | 017051081-2 | AA3003 H14 | 0.050"X60"XC | 0.050 | 4.590 | 4.664 | 0.230 | 0.540 | 0.070 | 1.070 | 0.010 | - | - | 0.032 | - | 98.04 | 21.6 | 18.9 | 6.0 | |
| 521-5 | R154276 | 017050823-3 | AA6052 H32 | 0.190"X48"X96" | 0.189 | 2.082 | 2.136 | 0.140 | 0.220 | 0.010 | 0.030 | 2.380 | - | 0.003 | 0.011 | 0.170 | 97.02 | 31.6 | 24.1 | 13.0 | |
| 521-6 | R154276 | 017050823-4 | AA6052 H32 | 0.190"X48"X96" | 0.189 | 2.165 | 2.226 | 0.140 | 0.220 | 0.010 | 0.030 | 2.380 | - | 0.003 | 0.011 | 0.170 | 97.02 | 31.6 | 24.1 | 13.0 | |
| 521-7 | R154276 | 017050874-2 | AA6052 H32 | 0.190"X48"X96" | 0.180 | 2.160 | 2.206 | 0.150 | 0.220 | 0.010 | 0.040 | 2.420 | - | 0.004 | 0.012 | 0.180 | 96.96 | 31.6 | 24.4 | 11.0 | |
| 522-1 | R154260 | 117060374-2 | AA5052 H32 | 0.160"X57"XC | 0.159 | 4.362 | 4.400 | 0.130 | 0.280 | 0.010 | 0.080 | 2.520 | - | 0.010 | 0.013 | 0.170 | 96.73 | 32.8 | 23.9 | 15.5 | |
| 522-2 | R154260 | 117060371-2 | AA5052 H32 | 0.160"X57"XC | 0.159 | 4.314 | 4.354 | 0.130 | 0.260 | 0.010 | 0.080 | 2.520 | - | 0.010 | 0.013 | 0.170 | 96.73 | 33.6 | 23.9 | 15.0 | |
| 522-3 | R154069 | 1-174-2-1 | AA5052 H32 | 0.248"X60"XC | 0.248 | 4.317 | 4.352 | 0.080 | 0.260 | 0.010 | 0.010 | 2.500 | - | 0.010 | 0.020 | 0.210 | 96.94 | 34.4 | 24.2 | 16.0 | |
| 522-4 | R154069 | 2-178-2-2 | AA5052 H32 | 0.248"X60"XC | 0.249 | 4.135 | 4.172 | 0.080 | 0.220 | 0.010 | 0.010 | 2.490 | - | 0.010 | 0.020 | 0.200 | 97.05 | 34.1 | 23.8 | 15.0 | |
| 522-5 | R154139 | 017050674-1 | AA5052 H32 | 0.190"X48"X96" | 0.190 | 2.110 | 2.168 | 0.150 | 0.220 | 0.010 | 0.040 | 2.420 | - | 0.004 | 0.012 | 0.180 | 96.86 | 31.6 | 24.4 | 11.0 | |

MATERIAL CONFORMS FOR ALLOY 5052, H32 ALUMINUM ASSOCIATION STANDARDS, ASTM B209-10, AMS-QQ-A-250/25 AND AMS-4076L AND MATERIAL IN ALLOY 3003, H14 CONFORMS TO ALUMINUM ASSOCIATION STANDARDS, ASTM B209-10, AMS-QQ-A-250/25 AND AMS 4080K, COUNTRY OF MELT AND MANUFACTURE IN CHINA.

SPECIFICATION CONTROL DRAWING

PURCHASE MATERIAL 5052-H32 ALUMINUM SHEET

SPECIFICATION: QQ-A-250/8 OR AMS-QQ-A-250/8
OR AMS 4014
OR ASTM B209

PART NUMBER: M5052H32S | XXX | THK

WHERE "XXX" = SHEET THICKNESS (IN INCHES)

EG. 0.063" THICK SHEET = M5052H32.063

PREFERRED SIZE: .XXX BY 4FT BY 8FT

RELEASED
M 2009-10-30
WV

| | | | |
|--|--|----|----------|
| B | REFORMAT DWG. ADD B209 SPEC (ZN DB-1), PAR 08-0204 | CP | 09.09.26 |
| A | NEW ISSUE | DS | 01.09.08 |
| REV. | DESCRIPTION | BY | DATE |
| DESIGN | | | |
| DRAWN | | | |
| CHECKED | | | |
| MFG. APPR. | | | |
| APPROVED | | | |
| DE APPR. | | | |
| DATE | 09.09.26 | | |
| DART AEROSPACE LTD | | | |
| HAWKESBURY, ONTARIO CANADA | | | |
| DRAWING NO | | | |
| M5052H32S | | | |
| TITLE | | | |
| 5052-H32 SHEET SPEC | | | |
| COPYRIGHT © 2001 BY DART AEROSPACE LTD | | | |
| REV B | | | |
| SHEET 1 OF 1 | | | |
| SCALE | | | |
| N/S | | | |

Attach this inspection sheet with the corresponding material cert and remit to be scanned and received in

| | |
|-------------------------|-----------------------------------|
| DC 18 INSPECTION | ENGINEERING SIGNOFF (if required) |
| INSPECTED BY: <u>AM</u> | SIGNED OFF BY: _____ |
| DATE: <u>18/07/18</u> | DATE: _____ |

| | | | | |
|--|-----|-------|-------|---------|
| CUT SAMPLE PIECE OF MATERIAL AND PERFORM A HARDNESS CHECK. | | | | |
| RECORD RESULTS BELOW | | | | |
| HRC | HRB | DUR A | DUR D | WEBSTER |
| TYPE OF MATERIAL | | | | |
| SIZE OF TEST SAMPLE | | | | |
| HARDNESS / DUROMETER READING | | | | |

Testers located in the Quality Office

| | | |
|---|---------------------------------------|-------------------------|
| DESCRIPTION | NCR (Check Y/N) | COMMENTS |
| SURFACE DAMAGE | <input checked="" type="checkbox"/> Y | |
| CORRECT FINISH | <input checked="" type="checkbox"/> Y | |
| CORROSION | <input checked="" type="checkbox"/> Y | |
| CORRECT GRAIN DIRECTION | <input checked="" type="checkbox"/> Y | |
| CORRECT MATERIAL PER M-DRAWING | <input checked="" type="checkbox"/> Y | <u>ASTM B209</u> |
| CORRECT THICKNESS | <input checked="" type="checkbox"/> Y | |
| PHOTO REQUIRED | <input checked="" type="checkbox"/> Y | |
| CORRECT REF # TO LINK CERT | <input checked="" type="checkbox"/> Y | <u>14: 7101705161-4</u> |
| CORRECT MATERIAL IDENTIFICATION | <input checked="" type="checkbox"/> Y | |
| CORRECT M# ON THE MATERIAL | <input checked="" type="checkbox"/> Y | |
| DOES THIS MATERIAL REQUIRE ENGINEERING SIGN OFF | <input checked="" type="checkbox"/> Y | |
| DOES THIS REQUIRE AN EXTRUSION REPORT | <input checked="" type="checkbox"/> Y | |

| | |
|---|-----------------------------------|
| MATERIAL: <u>M5052H85.125</u> | DATE: <u>18/07/18</u> |
| QUANTITY RECEIVED: <u>32.51</u> | QUANTITY REJECTED: <u>0</u> |
| THICKNESS ORDERED: <u>0.115"</u> | THICKNESS RECEIVED: <u>0.115"</u> |
| SHEET SIZE ORDERED: <u>4'x8'</u> | SHEET SIZE RECEIVED: <u>4'x8'</u> |
| PO / BATCH NO.: <u>10040374/5092917</u> | |

MATERIAL RECEIPT INSPECTION FORM

4949

Heat MS0574 run page eleven

6

Eaton Steel Bar Company Inspection Certificate 1691379

EN 10204:2004-3.1

| Customer | BOL | Ship Date | Customer PO | Item | Customer Item | Item Description |
|----------|-------|-------------|-------------|---------------|---------------|--|
| | 22352 | 09-Jan-2018 | B39362 | 11144 rev 003 | 916-R40C | 214 HR RD 4140/42MM 20K2in SBO OTSF FG M57 |

All bundles listed below were produced using steel from Heat MS2574 issued by GERDAU-MONROE and were completed from Eaton Steel Job 608532.

| Chemistry | Element | Value | Units | Location | Description | Value | Units |
|-------------|------------------------------|-----------------|-------|----------------|--------------------------------------|-------------|-----------|
| C | Carbon | 0.41000 | PMOT | TENSILE PSI | Tensile Strength in PSI Units | | PSI |
| Mn | Manganese | 0.85000 | PMOT | YIELD PSI | Yield Strength in PSI Units | | PSI |
| P | Phosphorus | 0.01200 | PMOT | ELONGATION | Percent Elongation | | PCT |
| S | Sulfur | 0.02000 | PMOT | REDUCTION | Percent Reduction in Area | | PCT |
| Si | Silicon | 0.26000 | PMOT | BRINELL SURF | Brinell Surface | 286.0 | BHN |
| Ni | Nickel | 0.09000 | PMOT | Heat Treating | Description | | Units |
| Cr | Chromium | 1.00000 | PMOT | AUSTEN TEMP P | Temper Temp in Fahrenheit | 500 - 2500 | D50F |
| Mo | Molybdenum | 0.18000 | PMOT | AUSTEN TEMP P | Austenitize Temp in Fahrenheit | 1600 - 1700 | D50F |
| Al | Aluminum | 0.04900 | PMOT | 58 TEMP P | Strengthen Temp in Fahrenheit | 500 - 2500 | D50F |
| Cu | Copper | 0.21000 | PMOT | MAGNETISM-HT | Magnetism in Gauss | 0 - 20 | GN |
| V | Vanadium | 0.00200 | PMOT | TIME AT TEMP | Time at Temperature | | Report |
| Ch | Chromium | 0.00200 | PMOT | QUENCH MEDIA | Quench Media Requirements | | PMOT |
| N | Nitrogen | 0.00000 | PMOT | STRESS FRR | Cell stress free | | CERTIFIED |
| P-S | Element Sum Unit | 0.01200 | PMOT | H-1140-40T | Quench & Temper | | COMPARBS |
| BT | 0.01200 | 0.01200 | 18 | | | | |
| Cleanliness | Description | Value | Units | | | | |
| Macro Etch | Report macro etch results. | | Units | | | | |
| Geometry | Description | Value | Units | | | | |
| Diameter | Diameter | 0.7420 - 0.7580 | IN | ROLL COUNTRY | Roll in Country | | USA |
| U1 | 1/16 inch from Quenched End | 57 | HRC | RED RATIO | Reduction Ratio | | 81.50 |
| U2 | 2/16 inch from Quenched End | 57 | HRC | ASTM Standard | Grade E7 | | COMPARBS |
| U3 | 3/16 inch from Quenched End | 57 | HRC | A139/133M-01 | ASTM BC Tensile and Yield properties | | COMPARBS |
| U4 | 4/16 inch from Quenched End | 57 | HRC | Structure | Description | | Value |
| U5 | 5/16 inch from Quenched End | 57 | HRC | PERCENT TM | Percent Tempered Martensite | | 80 - 100 |
| U6 | 6/16 inch from Quenched End | 57 | HRC | MICROSTRUCTURE | Reported Microstructure | | TM |
| U7 | 7/16 inch from Quenched End | 57 | HRC | Tag Number | Qty/Units | | Length |
| U8 | 8/16 inch from Quenched End | 55 | HRC | 022-211315 | 3920 LBS | | 20FT |
| U9 | 9/16 inch from Quenched End | 54 | HRC | | | | |
| U10 | 10/16 inch from Quenched End | 52 | HRC | | | | |
| U11 | 11/16 inch from Quenched End | 50 | HRC | | | | |
| U12 | 12/16 inch from Quenched End | 48 | HRC | | | | |
| U13 | 13/16 inch from Quenched End | 46 | HRC | | | | |
| U14 | 14/16 inch from Quenched End | 45 | HRC | | | | |
| U15 | 15/16 inch from Quenched End | 45 | HRC | | | | |
| U16 | 16/16 inch from Quenched End | 45 | HRC | | | | |
| U17 | 17/16 inch from Quenched End | 43 | HRC | | | | |
| U18 | 18/16 inch from Quenched End | 40 | HRC | | | | |
| U19 | 19/16 inch from Quenched End | 38 | HRC | | | | |

Bundles tags with Eaton Steel identifiers reference the steel grade, heat, purchase order number where applicable, part number, product description and quantity. Material produced in accordance with Eaton Steel's Quality Manual QM 00002 Rev 0 dated 11/21/2013.

We hereby certify the above to be in conformance, and a true copy of data represented in company records. This steel was not subject to weld repair or exposure to mercury while in the possession of Eaton Steel.

Created on 09-25-2018
Marc Benjamin Corporate Metallurgist
10221 Capital Avenue, Oak Park, MI 48237 USA
http://www.eatonsteel.com
Tel: 248-396-0434
Fax: 248-396-1434



GERDAU SPECIAL STEEL NORTH AMERICA
5581 MORRILL ROAD
JACKSON, MICHIGAN 48701

CERTIFIED MATERIAL TEST REPORT

| CUSTOMER ORDER NUMBER | CUSTOMER PART NUMBER | GERDAU ORDER NUMBER | QUANTITY ORDERED | DATE |
|-----------------------|----------------------|---------------------|------------------|----------|
| 1022324 | 1012462/41408FND | 852574 | 283416 102 | 11/05/13 |

REPORT TO
DAN MCNAUGHTON
EATON STEEL CORPORATION
10221 CAPITAL
OAK PARK, MI 48237

EATON STEEL CORPORATION
VULCAN HEAT TREATING
10 CROSCREEK TRAIL
PELHAM, AL 35124

OAK PARK, MI 48237

ORDERED

| GRADE | SIZE | RND | LENGTH |
|-------|--------|-----|--------|
| 4140 | 0 3/4" | | 20' 2" |

ITEM 1012462 REV 1 DTD 03/05/12. A322-07

CHEMICAL ANALYSIS

| | C | Mn | P | S | SI | NI | Cr | Mo | Cu | Sn | Al |
|---|-------|-------|-------|-------|------|------|------|------|------|-------|-------|
| | 0.41 | 0.85 | 0.012 | 0.020 | 0.26 | 0.09 | 1.00 | 0.18 | 0.21 | 0.008 | 0.049 |
| V | ND | | | | | | | | | | |
| | 3.002 | 0.002 | | | | | | | | | |

GRAIN SIZE

SPECIFICATION ASTM E112

FINE GRAIN 5-8

HARDENABILITY

SPECIFICATION ASTM A255/A304

| THEORETICAL | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 18 | 20 | 22 | 24 | 26 | 28 | 30 | 32 | 34 |
|-------------|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 54 | 52 | 50 | 48 | 46 | 45 | 45 | 43 | 40 | 38 | | | | | | | |

DI CALCULATION

SPECIFICATION CAT 1E0024

5.31

REDUCTION RATIO

SPECIFICATION ITEM 1012462

RATIO= 81.5 TO 1.0

PAGE 1

We certify that these data are correct and in compliance with specified requirements.

Gerdau Monroe
3008 East Front Street
Monroe, MI 48161

Wendy J. Craig

Quality Assurance Representative

CONTINUED ON PAGE 2



GERDAU SPECIAL STEEL NORTH AMERICA
5591 MORRILL ROAD
JACKSON, MICHIGAN 49201

CERTIFIED MATERIAL TEST REPORT

| ITEM NO. | CUSTOMER PART NUMBER | ITEM NUMBER | QUANTITY ORDERED | DATE |
|----------|----------------------|-------------|------------------|----------|
| 102324 | 1012462/4140EFD | M52574 | 283416 102 | 11/05/13 |

REPORT TO

DAN MCNAUGHTON
EATON STEEL CORPORATION
10221 CAPITAL

REPORT BY

EATON STEEL CORPORATION &
VULCAN HEAT TREATING
10 CROSSCREEK TRAIL
PELHAM, AL 35124

OAK PARK, MI 48237

ORDERED

| DATE | SIZE | FINISH | LENGTH |
|------|--------|--------|--------|
| 4140 | 0 3/4" | RND | 20' 2" |

ITEM 1012462 REV 1 DTD 03/05/12; A29/A29M-12; A322-07

RESIDUAL MAX SPECIFICATION ITEM 1012462

P+S = 0.0320

RESIDUAL MIN SPECIFICATION ITEM 1012462

P+S = 0.0320

ASTM E381 MACRO ETCH SATISFACTORY: S1/R1/C1; MEETS SAE J422

S5/05 RATING (WORST FIELD):

** MATERIAL 100% MELTED AND MANUFACTURED IN THE U.S.A. BY THE ELECTRIC ARC FURNACE AND CONTINUOUS CASTING METHOD. THE PRODUCT HAS NOT BEEN REPAIRED BY WELDING AND THIS MATERIAL HAS NOT BEEN EXPOSED TO MERCURY OR TO ANY OTHER METAL ALLOY THAT IS LIQUID AT AMBIENT TEMPERATURES DURING PROCESSING OR WHILE IN OUR POSSESSION. GERDAU MONITORS ALL INCOMING SCRAP AND ALL HEATS OF STEEL TO ENSURE THAT PRODUCTS SHIPPED ARE FREE OF RADIOACTIVE MATERIAL.

PAGE 2 OF 2

We certify that these data are correct and in compliance with specified requirements.

Gerdau Monroe
3000 East Front Street
Monroe, MI 48161

Wendy L. Craig
Wendy L. Craig
Quality Assurance Representative



Vulcan Treaded Products
10 Cross Creek Trail
Piedmont, AL 35124
Tel (205) 820-5100
Fax (205) 820-5150

JOB MATERIAL CERTIFICATION

Job No: 344313
Certification: S7520422 S7526384 S7526926
Job Information
Certified Date: 12/7/13

Test Results

| Test No | Test Description & Temp | Physical (lbs) | Elongation (%) | ACR (%) | Modulus (psi) | Stress (psi) | Creep (psi) | Notes |
|---------|-----------------------------------|----------------|----------------|---------|---------------|--------------|-------------|-------|
| 25750 | Test Quench & Temp Physical (lbs) | 18,000 | 17.8 | 40 | 80 | 30 | 30 | |
| 25751 | Test Quench & Temp Physical (lbs) | 18,000 | 17.8 | 40 | 80 | 30 | 30 | |
| 25752 | Test Quench & Temp Physical (lbs) | 18,000 | 17.8 | 40 | 80 | 30 | 30 | |
| 25753 | Test Quench & Temp Physical (lbs) | 18,000 | 17.8 | 40 | 80 | 30 | 30 | |
| 25754 | Test Quench & Temp Physical (lbs) | 18,000 | 17.8 | 40 | 80 | 30 | 30 | |
| 25755 | Test Quench & Temp Physical (lbs) | 18,000 | 17.8 | 40 | 80 | 30 | 30 | |
| 25756 | Test Quench & Temp Physical (lbs) | 18,000 | 17.8 | 40 | 80 | 30 | 30 | |
| 25757 | Test Quench & Temp Physical (lbs) | 18,000 | 17.8 | 40 | 80 | 30 | 30 | |
| 25758 | Test Quench & Temp Physical (lbs) | 18,000 | 17.8 | 40 | 80 | 30 | 30 | |
| 25759 | Test Quench & Temp Physical (lbs) | 18,000 | 17.8 | 40 | 80 | 30 | 30 | |
| 25760 | Test Quench & Temp Physical (lbs) | 18,000 | 17.8 | 40 | 80 | 30 | 30 | |
| 25761 | Test Quench & Temp Physical (lbs) | 18,000 | 17.8 | 40 | 80 | 30 | 30 | |
| 25762 | Test Quench & Temp Physical (lbs) | 18,000 | 17.8 | 40 | 80 | 30 | 30 | |
| 25763 | Test Quench & Temp Physical (lbs) | 18,000 | 17.8 | 40 | 80 | 30 | 30 | |
| 25764 | Test Quench & Temp Physical (lbs) | 18,000 | 17.8 | 40 | 80 | 30 | 30 | |
| 25765 | Test Quench & Temp Physical (lbs) | 18,000 | 17.8 | 40 | 80 | 30 | 30 | |
| 25766 | Test Quench & Temp Physical (lbs) | 18,000 | 17.8 | 40 | 80 | 30 | 30 | |
| 25767 | Test Quench & Temp Physical (lbs) | 18,000 | 17.8 | 40 | 80 | 30 | 30 | |
| 25768 | Test Quench & Temp Physical (lbs) | 18,000 | 17.8 | 40 | 80 | 30 | 30 | |
| 25769 | Test Quench & Temp Physical (lbs) | 18,000 | 17.8 | 40 | 80 | 30 | 30 | |
| 25770 | Test Quench & Temp Physical (lbs) | 18,000 | 17.8 | 40 | 80 | 30 | 30 | |
| 25771 | Test Quench & Temp Physical (lbs) | 18,000 | 17.8 | 40 | 80 | 30 | 30 | |
| 25772 | Test Quench & Temp Physical (lbs) | 18,000 | 17.8 | 40 | 80 | 30 | 30 | |
| 25773 | Test Quench & Temp Physical (lbs) | 18,000 | 17.8 | 40 | 80 | 30 | 30 | |
| 25774 | Test Quench & Temp Physical (lbs) | 18,000 | 17.8 | 40 | 80 | 30 | 30 | |
| 25775 | Test Quench & Temp Physical (lbs) | 18,000 | 17.8 | 40 | 80 | 30 | 30 | |
| 25776 | Test Quench & Temp Physical (lbs) | 18,000 | 17.8 | 40 | 80 | 30 | 30 | |
| 25777 | Test Quench & Temp Physical (lbs) | 18,000 | 17.8 | 40 | 80 | 30 | 30 | |
| 25778 | Test Quench & Temp Physical (lbs) | 18,000 | 17.8 | 40 | 80 | 30 | 30 | |
| 25779 | Test Quench & Temp Physical (lbs) | 18,000 | 17.8 | 40 | 80 | 30 | 30 | |
| 25780 | Test Quench & Temp Physical (lbs) | 18,000 | 17.8 | 40 | 80 | 30 | 30 | |
| 25781 | Test Quench & Temp Physical (lbs) | 18,000 | 17.8 | 40 | 80 | 30 | 30 | |
| 25782 | Test Quench & Temp Physical (lbs) | 18,000 | 17.8 | 40 | 80 | 30 | 30 | |
| 25783 | Test Quench & Temp Physical (lbs) | 18,000 | 17.8 | 40 | 80 | 30 | 30 | |
| 25784 | Test Quench & Temp Physical (lbs) | 18,000 | 17.8 | 40 | 80 | 30 | 30 | |
| 25785 | Test Quench & Temp Physical (lbs) | 18,000 | 17.8 | 40 | 80 | 30 | 30 | |
| 25786 | Test Quench & Temp Physical (lbs) | 18,000 | 17.8 | 40 | 80 | 30 | 30 | |
| 25787 | Test Quench & Temp Physical (lbs) | 18,000 | 17.8 | 40 | 80 | 30 | 30 | |
| 25788 | Test Quench & Temp Physical (lbs) | 18,000 | 17.8 | 40 | 80 | 30 | 30 | |
| 25789 | Test Quench & Temp Physical (lbs) | 18,000 | 17.8 | 40 | 80 | 30 | 30 | |
| 25790 | Test Quench & Temp Physical (lbs) | 18,000 | 17.8 | 40 | 80 | 30 | 30 | |
| 25791 | Test Quench & Temp Physical (lbs) | 18,000 | 17.8 | 40 | 80 | 30 | 30 | |
| 25792 | Test Quench & Temp Physical (lbs) | 18,000 | 17.8 | 40 | 80 | 30 | 30 | |
| 25793 | Test Quench & Temp Physical (lbs) | 18,000 | 17.8 | 40 | 80 | 30 | 30 | |
| 25794 | Test Quench & Temp Physical (lbs) | 18,000 | 17.8 | 40 | 80 | 30 | 30 | |
| 25795 | Test Quench & Temp Physical (lbs) | 18,000 | 17.8 | 40 | 80 | 30 | 30 | |
| 25796 | Test Quench & Temp Physical (lbs) | 18,000 | 17.8 | 40 | 80 | 30 | 30 | |
| 25797 | Test Quench & Temp Physical (lbs) | 18,000 | 17.8 | 40 | 80 | 30 | 30 | |
| 25798 | Test Quench & Temp Physical (lbs) | 18,000 | 17.8 | 40 | 80 | 30 | 30 | |
| 25799 | Test Quench & Temp Physical (lbs) | 18,000 | 17.8 | 40 | 80 | 30 | 30 | |
| 25800 | Test Quench & Temp Physical (lbs) | 18,000 | 17.8 | 40 | 80 | 30 | 30 | |

David Chubb
David Chubb
Chubb David - Supervisor

Date: 12/7/13
New Orleans 12/7/13 8:43 AM not open Page 2 of 2

SPECIFICATION CONTROL DRAWING

PART NUMBER: MT-4140-R(D.DDD)
WHERE "D.DDD" = DIAMETER IN INCHES
EX. 4" ROUND BAR = MT-4140-R-4.000

[illegible]

Attach this inspection sheet with the corresponding material cert and remit to be scanned and received in

| | |
|-------------------------|-----------------------------------|
| QC 18 INSPECTION | ENGINEERING SIGNOFF (if required) |
| INSPECTED BY: <u>AT</u> | SIGNED OFF BY: _____ |
| DATE: <u>18/07/18</u> | DATE: _____ |

| | | | | |
|--|-----|-------|-------|---------|
| CUT SAMPLE PIECE OF MATERIAL AND PERFORM A HARDNESS CHECK. | | | | |
| RECORD RESULTS BELOW | | | | |
| HRC | HRB | DUR A | DUR D | WEBSTER |
| TYPE OF MATERIAL | | | | |
| SIZE OF TEST SAMPLE | | | | |
| HARDNESS / DUROMETER READING | | | | |

Testers located in the Quality Office

| | | |
|---|-------------------------------------|----------|
| DESCRIPTION | NCR (Check Y/N) | COMMENTS |
| SURFACE DAMAGE | <input checked="" type="checkbox"/> | |
| CORRECT FINISH | <input checked="" type="checkbox"/> | |
| CORROSION | <input checked="" type="checkbox"/> | |
| CORRECT GRAIN DIRECTION | <input checked="" type="checkbox"/> | |
| CORRECT MATERIAL PER M-DRAWING | <input checked="" type="checkbox"/> | |
| CORRECT THICKNESS | <input checked="" type="checkbox"/> | |
| PHOTO REQUIRED | <input checked="" type="checkbox"/> | |
| CORRECT REF # TO LINK CERT | <input checked="" type="checkbox"/> | |
| CORRECT MATERIAL IDENTIFICATION | <input checked="" type="checkbox"/> | |
| CORRECT M# ON THE MATERIAL | <input checked="" type="checkbox"/> | |
| DOES THIS MATERIAL REQUIRE ENGINEERING SIGN OFF | <input checked="" type="checkbox"/> | |
| DOES THIS REQUIRE AN EXTRUSION REPORT | <input checked="" type="checkbox"/> | |

| | | | |
|---------------------------------|-------------------------------|----------------------------------|-----------------------------------|
| MATERIAL CERT REC'D: <u>Yes</u> | QUANTITY RECEIVED: <u>15'</u> | THICKNESS ORDERED: <u>0.750"</u> | THICKNESS RECEIVED: <u>0.750"</u> |
| QUANTITY INSPECTED: <u>15'</u> | SHEET SIZE ORDERED: <u>—</u> | SHEET SIZE RECEIVED: <u>—</u> | |
| QUANTITY REJECTED: <u>0</u> | | | |

MATERIAL: M7-41400T-0450 R0.750 DATE: 18/07/18

PO / BATCH NO.: PO040324/5003067

MATERIAL RECEIPT INSPECTION FORM



NIAGARA
LASALLE
CORPORATION
1412 150th Street
Hammond IN 46327-1799

CERTIFICATION

| | |
|-------------|----------|
| CERTIFICATE | Rev |
| H184359 | 2 |
| DATE | 02/06/18 |
| PAGE | 6 |

PURCHASE ORDER B393391
ORDER 960193-3
CUSTOMER ITEM V012162
GRADE Q14140
SIZE 2.2500
SHAPE Round
ITEM 142250240Q04A
LENGTH 20" / 24" 0"
LENGTH MM 6096 / 7315.2

(4140) 42 CAL-TRT QT-HR-STEEL FREE 125K TS 105K YS (0.2% 100K) 16% EL 50% R/A SURFACE-HBN 269/321 Spec/Rev: ASTM A434-06(2012) CL-BC Spec/Rev: ASTM A576-90B(2012)
Spec/Rev: ASME SA183/SA183M GR-B7 Spec/Rev: ASTM A193/A193M-14 GR-B7 Spec/Rev: ASTM A287A29M-16 Spec/Rev: ASTM

| | | | | | | |
|----------------|-----------------|-----------|----------------------|-------|--------|------|
| HEAT | A174907 | FINE(5-8) | STEEL DYNAMICS (USA) | BLOOM | 35.2:1 | 5.85 |
| GRAIN PRACTICE | SOURCE / MELTED | CAST | REDUCTION RATIO | DI | | |

| | | | | | | | | | | | |
|----|-------|-------|-------|-------|-------|-------|-------|------|------|-------|-------|
| C | 0.400 | 0.870 | 0.011 | 0.016 | 0.250 | 0.100 | 1.020 | .220 | .220 | 0.032 | 0.002 |
| MN | P | S | SI | NI | CR | MO | CU | AL | V | | |

| | | | | | | | | | | | |
|----|-------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| N | 0.009 | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |
| TE | AS | PB | SE | BI | B | | | | | | |

| | | | | | | | | | | |
|-----|---------|----------|-------------|-------------|----------|------------|-----------|---------|---------|--|
| JOB | HS46434 | TENSILE | 149,242 PSI | 133,385 PSI | 18.70 | 59.60 | HBN = 293 | 131,598 | SR TEMP | |
| | | 2% YIELD | ELONG | R OF A | HARDNESS | .02% YIELD | | | | |

| | | | | | | | | | | |
|-----|---------|-------------|---------|--------------|-------------|--------|-------------|------|--|--|
| JOB | HS46434 | MACRO | SURFACE | AUSTENITIZED | TEMPERED | STRESS | | | | |
| | | TEMPERATURE | TIME | QUENCH | TEMPERATURE | TIME | TEMPERATURE | TIME | | |

| | | | | | | | | | | | | | | | |
|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| 01 | 02 | 03 | 04 | 05 | 06 | 08 | 10 | 12 | 14 | 16 | 20 | 24 | 26 | 32 | 40 |
| 56 | 56 | 56 | 56 | 56 | 56 | 56 | 54 | 50 | 50 | 48 | 46 | 45 | 43 | 40 | |

| | | | | | | | |
|---------|---------|--------------|--------|---------|---------|--------------|--------|
| LOT | JOB | WEIGHT (LBS) | PIECES | LOT | JOB | WEIGHT (LBS) | PIECES |
| 6573137 | HS46434 | 3,980 | 14 | 6589267 | HS46434 | 4,260 | 13 |

WE, hereby certify that these goods were produced in compliance with all applicable requirements of sections 6, 7, and 12 of the Fair Labor Standards Act, as amended, and all regulations and orders of the United States Department of Labor issued under section 14 thereof. Material was not exposed to mercury or any metal alloy that is liquid at ambient temperature during processing or while in our possession. No weld repairs performed on the above material.

By: *Walter P. Kreitzer*
Walter P. Kreitzer - Director of Q.A./Chief Metallurgist

CERTIFICATE OF TEST

| REV. | DESCRIPTION | ECON # | DATE | BY | APPROVED |
|------|-------------|--------|----------|----|----------|
| A | NEW ISSUE | 17-780 | 17.12.13 | VM | MA |

SPECIFICATION CONTROL DRAWING

PURCHASE MATERIAL : AISI 4140 ROUND BAR
 MINIMUM ROCKWELL C = 20 Rc
 MAXIMUM ROCKWELL C = 38 Rc

SPECIFICATION: ASTM A29, AMS 6349, AMS 6382, AMS 6529

PART NUMBER: MT-4140-R(D,DD)
 WHERE "D,DD" = DIAMETER IN INCHES
 EX. 4" ROUND BAR = MT-4140-R-4.000

| | |
|--|-----------------|
|  DART AEROSPACE <small>Manufacturing, Quality, Growth</small> | |
| TITLE AISI 4140 ROUND BAR | |
| PART NO MT-4140-R | REV A |
| TOOLING INITIALS AND DATE DESIGNED BY: VM 17/12/13 DRAWN BY: VM 17/12/13 CHECKED BY: RM 17/12/13 WORKED BY: DP 17/12/13 APPROVED BY: DP 17/12/13 | |
| UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES DIMENSIONS ARE TO BE AFTER FINISHING TOLERANCES: FRACTIONS 1/16 DECIMALS .005 ANGLES 1.0 SURFACE 1.0 FINISHES 1.0 SCALE: 1" = 1" | |
| SHEET 1 OF 1 | |

Attach this inspection sheet with the corresponding material cert and remit to be scanned and received in

| | |
|-----------------------------------|-------------------------|
| QC 18 INSPECTION | |
| ENGINEERING SIGNOFF (if required) | INSPECTED BY: <u>AT</u> |
| SIGNED OFF BY: _____ | DATE: <u>18/07/18</u> |

| | | | | |
|--|-----|-------|-------|---------|
| CUT SAMPLE PIECE OF MATERIAL AND PERFORM A HARDNESS CHECK. | | | | |
| RECORD RESULTS BELOW | | | | |
| HRC | HRB | DUR A | DUR D | WEBSTER |
| TYPE OF MATERIAL | | | | |
| SIZE OF TEST SAMPLE | | | | |
| HARDNESS / DUROMETER READING | | | | |

Testers located in the Quality Office

| DESCRIPTION | NCR (Check Y/N) | COMMENTS |
|---|-------------------------------------|--------------------|
| SURFACE DAMAGE | <input checked="" type="checkbox"/> | |
| CORRECT FINISH | <input checked="" type="checkbox"/> | |
| CORROSION | <input checked="" type="checkbox"/> | |
| CORRECT GRAIN DIRECTION | <input checked="" type="checkbox"/> | |
| CORRECT MATERIAL PER M-DRAWING | <input checked="" type="checkbox"/> | <u>AS PM 229</u> |
| CORRECT THICKNESS | <input checked="" type="checkbox"/> | |
| PHOTO REQUIRED | <input checked="" type="checkbox"/> | |
| CORRECT REF # TO LINK CERT | <input checked="" type="checkbox"/> | |
| CORRECT MATERIAL IDENTIFICATION | <input checked="" type="checkbox"/> | <u>MT: A174907</u> |
| CORRECT M# ON THE MATERIAL | <input checked="" type="checkbox"/> | |
| DOES THIS MATERIAL REQUIRE ENGINEERING SIGN OFF | <input checked="" type="checkbox"/> | |
| DOES THIS REQUIRE AN EXTRUSION REPORT | <input checked="" type="checkbox"/> | |

| | |
|---|-----------------------------------|
| MATERIAL: <u>M7-44027-02.250</u> | DATE: <u>18/07/18</u> |
| MATERIAL CERT REC'D: <u>10'</u> | QUANTITY RECEIVED: <u>10'</u> |
| QUANTITY INSPECTED: <u>10'</u> | QUANTITY REJECTED: <u>0</u> |
| THICKNESS ORDERED: <u>2.250"</u> | THICKNESS RECEIVED: <u>2.250"</u> |
| SHEET SIZE ORDERED: <u>—</u> | SHEET SIZE RECEIVED: <u>—</u> |
| PO / BATCH NO.: <u>10040374/5092919</u> | |

MATERIAL RECEIPT INSPECTION FORM

4124

98703

out

ESSAR
STEEL

ESSAR STEEL ALGOMA INC., 105 West Street, Sault Ste. Marie, Ontario, Canada P6A 7B4

P44 516V

| | | | | | |
|------------------------------------|---|------------------------------------|--|-----------------------|---|
| SO No./Item & Date: | 805689 000010 2017/10/04 | Shipment No. & Date: | 1000262272 2017/11/16 | TC No., Date & Time: | ESA-442293 2017/11/18 - 00:59:38 |
| Sold to Customer Name and Address: | LES ACIER TRANSBEC (1997) LTEE BOUL. LE CORBUSIER #201-4054 LAVAL, Quebec, Canada | Ship to Customer Name and Address: | LES ACIER TRANSBEC (1997) LTEE BOUL. J.F. KENNEDY 22 ST JEROME, Quebec, Canada | Customer PO No./Item: | OU-48322/1 |
| | | | | BOL NO.: | 1000262272 |
| | | | | Cust. Part No.: | .313 X 96 X 240 |
| | | | | Carrier: | GBS & SONS TRUCKING LTD. - 413 REV 1050 |

Customer Specification: HR STEEL PLATE HSLA CSA G40.21 MAX 13 As Rolled Std Thickness Tol Structural Steel Top and Bottom Standard Surface Flatness 1/2 A6 Fine Grain Fully Killed

Supplementary Instructions: Test Cert 1: parcanand@aciertransbec.com Test Cert 2: natthalie.legault@aciertransbec.com

Insp TIR: Test Report As Per Spec

Cust Use: STRUCTURAL STEEL

ESSAR STEEL ALGOMA INC. HEREBY CERTIFIES THAT THE MATERIAL HEREIN DESCRIBED WAS MADE AND TESTED IN ACCORDANCE WITH THE RULES OF THE SPECIFICATION SHOWN. ALL RESULTS ARE RETAINED IN ACCORDANCE WITH THE COMPANY'S STANDARD RECORD KEEPING PRACTICES.

THIS MILL TEST REPORT MAY NOT BE REPRODUCED EXCEPT IN FULL WITHOUT WRITTEN APPROVAL OF ESSAR STEEL ALGOMA INC. IF YOU RECEIVE THIS DOCUMENT AND ARE NOT THE INTENDED RECEIVER, PLEASE CALL (705) 945-4000 FOR INSTRUCTIONS ON METHOD OF DISPOSAL OF DOCUMENT. THIS TEST REPORT HAS BEEN GENERATED BY A COMPUTERIZED SYSTEM AND IS VALID WITHOUT A PHYSICAL SIGNATURE.

MEETS EN 10204 2004 TYPE 3.1

ISO QUALITY AND ENVIRONMENTAL CERTIFICATES AVAILABLE AT WWW.ALGOMA.COM

ALL HEATS FULLY KILLED.

HEATS INDICATED WITH (+) FINE GRAINED

HEATS INDICATED WITH (+) MADE IN CANADA FOR NAFTA duty preference and NAFTA marking purposes

| Dimensions (T x W x L) | Batch No. | Heat No.-MS | Quantity | No. of Pcs | Dimensions (T x W x L) | Batch No. | Heat No.-MS | Quantity | No. of Pcs | | | |
|-------------------------------|-----------|-------------|----------|------------|-----------------------------|-----------|-------------|----------|------------|-------|-------|-------|
| 0.3130" x 96.000" x 240.00" | BD6051 | 2767D4-58 | 8,180 LB | 4 | 0.3130" x 96.000" x 240.00" | BD6052 | 2767D4-58 | 8,180 LB | 4 | | | |
|CHEMICAL PROPERTIES..... | | | | | | | | | | | | |
| Heat No. (wt%) | C | Mn | P | S | Si | Cr | Ni | Mo | Al | Nb | V | Ti |
| 2767D4 ⁺ | 0.15 | 1.03 | 0.009 | 0.006 | 0.298 | 0.03 | 0.02 | 0.04 | 0.02 | 0.040 | 0.000 | 0.003 |

CHEMICAL PROPERTIES

MECHANICAL PROPERTIES

| Heat No. | Batch No. | SRCE | LAB | GAUGE | COND | METH | DIR | LOC | YIELD(KSI) | TENSILE(KSI) | EL SCALE | ELONG(%) |
|----------|-----------|------|-----|--------|------|------|-----|-----|------------|--------------|----------|----------|
| 2767D4 | 1111 | 166 | ALG | 0.3130 | AR | .2 | T | F | 48.0 | 70.0 | 8" | 27 |
| 2767D4 | 1111 | 166 | ALG | 0.3130 | AR | .2 | T | F | 47.0 | 69.0 | 8" | 25 |

KASHIF REHMAN
MANAGER METALLURGICAL SERVICES

****WARNING**** This document is the property of ESSAR STEEL ALGOMA INC. and is to be used for the purpose of providing information only. It is not to be used for any other purpose. This document is the property of ESSAR STEEL ALGOMA INC. and is to be used for the purpose of providing information only. It is not to be used for any other purpose.

| REV | DESCRIPTION | ECH # | DATE | BY | APPROVED |
|-----|-------------------------------------|--------|------------|-----|----------|
| B | REMOVED LENGTH AND WIDTH DIMENSIONS | 17.675 | 26/09/2017 | SAC | WM |

SPECIFICATION CONTROL DRAWING

PURCHASE MATERIAL:

SPECIFICATION:

PART NUMBER:

EXAMPLE:

HOT ROLLED STEEL PLATE

ASTM A36 OR ASTM A1011 OR 44W OR ASTM A1018

MT-HRS-P-[T.TTT]

WHERE T.TTT IS PLATE THICKNESS IN INCHES

MT-HRS-P-0.750

TOLERANCES PER MANUFACTURER SPECIFICATIONS

| | |
|---|---|
| PART AEROSPACE <small>Manufacturing Quality Control</small> | |
| TITLE HOT ROLLED STEEL PLATE | |
| REV MT-HRS-P | REV B |
| DESIGNED BY SAC 08/2017 | XX 2 003 FRACIONS 1/8 |
| CHECKED BY SAC 08/22/2017 | XX 1 01 ANGLES 1/8 |
| INFO APPR JDP 08/22/2017 | 1 DIMENSIONS ARE IN INCHES 2 ANGLES ARE IN DEGREES 3 UNLESS OTHERWISE SPECIFIED 4 TOLERANCES ARE TO DIM 5 UNLESS OTHERWISE SPECIFIED 6 ALL DIMENSIONS ARE TO CENTER UNLESS OTHERWISE SPECIFIED |
| APPROVED BY WM 10/05/2017 | DATE 9/27/2017 |
| SCALE NTS | WEIGHT N/A |
| COPYRIGHT © 2017 BY DM1 AEROSPACE LTD | |

Attach this inspection sheet with the corresponding material cert and remit to be scanned and received in

| | |
|-----------------------------------|-------------------------|
| QC 18 INSPECTION | |
| ENGINEERING SIGNOFF (if required) | INSPECTED BY: <u>AT</u> |
| SIGNED OFF BY: | DATE: <u>18/07/18</u> |

| | | | | |
|--|-----|-----|-------|-------|
| CUT SAMPLE PIECE OF MATERIAL AND PERFORM A HARDNESS CHECK. | | | | |
| RECORD RESULTS BELOW | | | | |
| TYPE OF MATERIAL | HRC | HRB | DUR A | DUR D |
| SIZE OF TEST SAMPLE | | | | |
| HARDNESS / DUROMETER READING | | | | |

Testers located in the Quality Office

| DESCRIPTION | NCR (Check Y/N) | COMMENTS |
|---|-----------------|-----------|
| SURFACE DAMAGE | Y | |
| CORRECT FINISH | Y | |
| CORROSION | Y | |
| CORRECT GRAIN DIRECTION | Y | |
| CORRECT MATERIAL PER M-DRAWING | Y | 44m |
| CORRECT THICKNESS | Y | |
| PHOTO REQUIRED | Y | |
| CORRECT REF # TO LINK CERT | Y | MT 271704 |
| CORRECT MATERIAL IDENTIFICATION | Y | |
| CORRECT M# ON THE MATERIAL | Y | |
| DOES THIS MATERIAL REQUIRE ENGINEERING SIGN OFF | Y | |
| DOES THIS REQUIRE AN EXTRUSION REPORT | Y | |

| | |
|--|-----------------------------------|
| MATERIAL: <u>MT-HES-P-0.3125</u> | DATE: <u>18/07/18</u> |
| QUANTITY RECEIVED: <u>16.1</u> | QUANTITY REJECTED: <u>0</u> |
| QUANTITY INSPECTED: <u>16.1</u> | |
| THICKNESS ORDERED: <u>0.3125</u> | THICKNESS RECEIVED: <u>0.3125</u> |
| | SHEET SIZE ORDERED: <u>4x4'</u> |
| | SHEET SIZE RECEIVED: <u>4x4'</u> |
| PO / BATCH NO.: <u>80040374/509221</u> | |

MATERIAL RECEIPT INSPECTION FORM

Material Test Report

Manifest: 337833

Ticket:

5590165

Our Order: 444849 - 2 Alloy Temper: 6061 T6511
 Die: ES05758 Print Date: 3/28/18
 Cust P.O.: C75638 Description: 1.375
 Part: V138822 ✓

8146573

| Chemical Composition Range | | | | | | | | | | |
|----------------------------|------|------|------|------|------|------|------|------|------------|-------------|
| 6061 | Si | Fe | Cu | Mn | Mg | Cr | Zn | Ti | Other Each | Other Total |
| Min | 0.40 | 0.15 | 0.15 | 0.8 | 0.04 | 0.35 | 0.25 | 0.15 | 0.05 | 0.15 |
| Max | 0.8 | 0.7 | 0.40 | 0.15 | 1.2 | 0.35 | 0.25 | 0.15 | 0.05 | 0.15 |

| Mechanical Properties | | | | | | | | | | |
|-----------------------|--------|-------|-----------|------------------|-------|-----------|------------|----------------|--------------|--|
| Sample ID | Cast # | Lot # | Test Date | Ultimate Tensile | Yield | 2% offset | Elongation | 2" gage length | Strength ksi | |
| 430656 | 39756 | All | 3/28/18 | 40.26 | 35.04 | | 11.9 | | | |

Applicable Specifications: ASTM B221-14
 AMS-QQ-A200/8A
 Country of Origin: ONTARIO, CANADA

Can Art Aluminum Extrusion Inc. certifies that materials shipped under this order have been inspected and tested in accordance with Aluminum Association and agreed upon customer specifications. Can Art assumes no liability for additional costs which may be incurred during the customer's manufacture and sale of its products, and is subject only to the replacement of any materials not within agreed upon specifications provided written notification is received by Can Art within 30 days from the date of shipment.

Evan Eng. Quality Assurance Manager

SPECIFICATION CONTROL DRAWING

PURCHASE MATERIAL 6061-T6/T651/T6510/T6511/T62 ALUMINUM ROUND BAR
 SPECIFICATION: QQ-A-225/8 OR AMS-QQ-A-225/8 (OR AMS 4117/4128/4115/4116)
 OR QQ-A-200/8 OR AMS-QQ-A-200/8 (OR AMS 4180)
 OR ASTM B211 OR ASTM B221

PART NUMBER: M6061T6R/D DDD/
 DIA.

WHERE "D DDD" = DIAMETER IN INCHES
 EG. 5/8" ROUND BAR = M6061T6R0.625

RELEASED
 2009-09-09
 147

| | | | | |
|--|--|----------|----|----------|
| REV | DESCRIPTION | DATE | BY | DATE |
| A | REFORMAT DWG. ADD B211 & B221 SPEC. (2N DB-1). | 09.07.13 | DS | 01.06.09 |
| | NEW ISSUE | | | |
| DESIGN | DART AEROSPACE LTD | | | |
| DRAWN | DRAWING NO. | | | |
| CHECKED | M6061T6R | | | |
| MFG. APPR. | TITLE | | | |
| APPROVED | 6061-T6 ROUND BAR | | | |
| DE APPR | | | | |
| DATE | 09.07.13 | | | |
| COPYRIGHT © 2009 BY DART AEROSPACE LTD | | | | |

| | |
|----------------------|------------------|
| MATERIAL: | M6061768.1.375 |
| DATE: | 18/07/18 |
| MATERIAL CERT RECD: | ✓/25 |
| QUANTITY RECEIVED: | 15' |
| QUANTITY INSPECTED: | 15' |
| QUANTITY REJECTED: | 0 |
| THICKNESS ORDERED: | 1.375" |
| THICKNESS RECEIVED: | 1.375" |
| SHEET SIZE ORDERED: | — |
| SHEET SIZE RECEIVED: | — |
| PO / BATCH NO.: | P0040374/5092922 |

| | | | | |
|--|-----|-----|-------|-------|
| CUT SAMPLE PIECE OF MATERIAL AND PERFORM A HARDNESS CHECK. | | | | |
| RECORD RESULTS BELOW | | | | |
| TYPE OF MATERIAL | HRC | HRB | DUR A | DUR D |
| SIZE OF TEST SAMPLE | | | | |
| HARDNESS / DUROMETER READING | | | | |

Attach this inspection sheet with the corresponding material cert and remit to be scanned and received in

49465

R4140-411

50373

14389

1/6

Eaton Steel Bar Company Inspection Certificate 1701209

EN 10204:2004-3.1

Customer: Eaton Steel Bar Company Inspection Certificate 1701209

Customer BOL 225539 Ship Date 19-Feb-2018 Customer PO R40059 Item 8656 rev 008 Customer Item 013733 Item Description 4 HR RD(1407)KR 21/24H SBO OTSF VD Co-A1FG MST

All bundles listed below were produced using steel from Heat 12060470 issued by GENDAU-BRAZIL and were completed from Eaton Steel Job 823764.

| Chemistry | Description | Value | Units | Item | Description | Value | Units |
|-------------|------------------------------|-----------------|-------|-----------------|--------------------------------------|-------------|-------------------|
| C | Carbon | 0.41000 | PMGT | J30 | 30/16 inch from Quenched End | 42 | HRC |
| Mn | Manganese | 0.94000 | PMGT | J32 | 32/16 inch from Quenched End | 42 | HRC |
| P | Phosphorus | 0.01400 | PMGT | Mechanical | Description | Value | Units |
| S | Sulfur | 0.01400 | PMGT | TENSILE PSI | Tensile Strength in PSI Unit | 153100 | PSI |
| Si | Silicon | 0.29000 | PMGT | YIELD PSI | Yield Strength in PSI Unit | 134400 | PSI |
| Ni | Nickel | 0.09000 | PMGT | ELONGATION | Percent Elongation in Area | 19.00 | PCT |
| Cr | Chromium | 1.04000 | PMGT | REDUCTION | Percent Reduction in Area | 55.0 | PCT |
| Mo | Molybdenum | 0.24000 | PMGT | BRINELL SURF | Brinell Surface | 313.0 | BHN |
| Al | Aluminum | 0.01700 | PMGT | Ideal Testing | Description | Value | Units |
| Cu | Copper | 0.18000 | PMGT | TEMPER TEMP P | Temper Temp in Fahrenheit | 500 - 2500 | DEGP |
| V | Vanadium | 0.00400 | PMGT | AUSTEN TEMP P | Austenitizing Temp in Fahrenheit | 1600 - 1700 | DEGP |
| Co | Cobalt | 0.00400 | PMGT | SR TEMP F | Stress Relief Temp in Fahrenheit | 500 - 2500 | DEGP |
| N | Nitrogen | 0.00570 | PMGT | MACHINISM-HT | Machinism in Gauss | 0 - 20 | GN |
| DI | Ideal Diameter | 6.62910 | IN | TIME AT TEMP | Time at Temperature | Report | Report |
| Geometry | Description | Value | Units | QUENCH MEDIA | Quench Media Requirements | PERM/O | PERM/O |
| SAE J432 OX | SAE J432 Oxide Rating | 0.0 - 5.0 | MIN | STRESS FREE | Stress Free | CERTIFIED | CERTIFIED |
| SAE J432 SI | SAE J432 Silicate Rating | 0.0 - 5.0 | MIN | HT1410-1420 | Quench & Temper | CONFORMS | CONFORMS |
| MACHO KTH | Report macro etch results | | | HEAT PROCESSING | Description | Value | Units |
| DIAMETER | Diameter | 4.0000 - 4.0635 | IN | ROLLING COUNTRY | Rolling in Country | BRA | BRA |
| Geometry | Description | Value | Units | RED RATIO | Reduction Ratio | 7.10 | RED |
| J1 | 1/16 inch from Quenched End | 59 | HRC | ASTM STANDARD | Grade B7 | CONFORMS | CONFORMS |
| J2 | 2/16 inch from Quenched End | 59 | HRC | A193/199-01 | ASTM BC Tensile and Yield properties | CONFORMS | CONFORMS |
| J3 | 3/16 inch from Quenched End | 58 | HRC | A434-90A-BC | Percent Tempered Martensite | 80 - 100 | PCT |
| J4 | 4/16 inch from Quenched End | 58 | HRC | PERCENT TM | Reported Microstructure | Qty Units | Length |
| J5 | 5/16 inch from Quenched End | 57 | HRC | MICROSTRUCTURE | 022-2201726 | 8958 LBS | 23ft10in/21ft10in |
| J6 | 6/16 inch from Quenched End | 57 | HRC | Tag Number | | | |
| J7 | 7/16 inch from Quenched End | 57 | HRC | | | | |
| J8 | 8/16 inch from Quenched End | 57 | HRC | | | | |
| J9 | 9/16 inch from Quenched End | 56 | HRC | | | | |
| J10 | 10/16 inch from Quenched End | 56 | HRC | | | | |
| J11 | 11/16 inch from Quenched End | 55 | HRC | | | | |
| J12 | 12/16 inch from Quenched End | 54 | HRC | | | | |
| J14 | 14/16 inch from Quenched End | 52 | HRC | | | | |
| J16 | 16/16 inch from Quenched End | 51 | HRC | | | | |
| J18 | 18/16 inch from Quenched End | 49 | HRC | | | | |
| J20 | 20/16 inch from Quenched End | 46 | HRC | | | | |
| J22 | 22/16 inch from Quenched End | 43 | HRC | | | | |
| J24 | 24/16 inch from Quenched End | 43 | HRC | | | | |
| J26 | 26/16 inch from Quenched End | 42 | HRC | | | | |
| J28 | 28/16 inch from Quenched End | 42 | HRC | | | | |

Bundles legs with Eaton Steel identifiers reference the steel grade, heat, purchase order number where applicable, part number, product description and quantity. Material produced in accordance with Eaton Steel's Quality Manual QM-00002 Rev 0 dated 11/2/2013.

Who hereby certifies the above to be in conformance, and a true copy of data represented in company records. This steel was not subject to weld repair or exposed to mercury while in the possession of Eaton Steel.
Created on 19-Feb-2018
Marc Benjamin, Corporate Metallurgist
10221 Capital Avenue, Oak Park, MI 48237 USA
http://www.eatonsteel.com
Tel: 248-398-3634
Fax: 248-398-1434

GERDAU
CHARQUEADAS



OUR MANAGEMENT SYSTEM IS CERTIFIED TO ISO 9001 / 18001 / 14001

CERTIFICADO DE QUALIDADE
QUALITY CERTIFICATE
CERTIFICADO DE CALIDAD

Page 1/2

| | | | | | | | | | | | | | | | | |
|---|--------|--|--------|--|--------|--|--------|---|-------|--------------------------|--------|--------|--------|--------|--------|--------|
| PART NUMBER 8168 | | PESO/WEIGHT (KG) 40.553.000 | | MATERIAL/MATERIAL 705013345 | | QUALIDADE/GRADE 4140T8 | | PRODUTO/PRODUCT HOT ROLLED ROUND BAR | | Cert. Nº 0000022413 | | | | | | |
| CLIENTE/CLIENT BATON STEEL BAR COMPANY | | | | | | | | NO HEAT TREATMENT AS ROLLED | | CORRIDA/HEAT 12080470 | | | | | | |
| NORMA/SPECIFICATION SPRC FOR ITEM 8168 006 23.01.2014 | | | | | | | | | | | | | | | | |
| Nota Fiscal/Invoice 0000017226 0000017311 0000017697 | | Pedido/Cust. Order 162566 162566 162566 | | Ord-Fornec/Ord-Supply 5336580 - 810897269 5336580 - 8108972808 5336580 - 8109066468 | | Lote/Batch 1208047006 1208047006 1208047007 | | Peso/Weight (kg) 22.523.000 13.530.000 4.500.000 | | | | | | | | |
| ANÁLISE QUÍMICA/CHEMICAL COMPOSITION | | | | | | | | | | | | | | | | |
| C | Fe | Si | P | S | Cr | Mn | Mo | V | Cu | Sn | Al | Ti | Nb | N | B | Pb |
| 0.410 | 0.94 | 0.29 | 0.014 | 0.024 | 1.04 | 0.09 | 0.24 | 0.0040 | 0.180 | 0.0120 | 0.0170 | 0.0010 | 0.0040 | 0.0057 | 0.0002 | 0.0010 |
| N | Cu | As | Sb | Bi | | | | | | | | | | | | |
| 1.002 | 0.0008 | 0.0030 | 0.0020 | 6.6291 | | | | | | | | | | | | |
| ENSAIOS MECÂNICOS/MECHANICAL PROP | | | | | | | | | | | | | | | | |
| Hardness | | | | | | | | | | | | | | | | |
| HB | | | | | | | | | | | | | | | | |
| 306.00 | | | | | | | | | | | | | | | | |
| ENSAIOS METALOGRAFICOS/METALLOGRAPHIC TESTS | | | | | | | | | | | | | | | | |
| Autentic Grain Size | | | | | | | | | | | | | | | | |
| 7 | | | | | | | | | | | | | | | | |
| MICROINCLUSÕES/INCLUSION RATING NUMBER | | | | | | | | | | | | | | | | |
| ASTM/SAE | | | | | | | | | | | | | | | | |
| REGULAR | A - TS | A - HS | B - TS | B - HS | C - TS | C - HS | D - TS | D - HS | | | | | | | | |
| 1.5 | 1.0 | 0.0 | 1.5 | 0.0 | 0.0 | 1.0 | 0.0 | 0.0 | | | | | | | | |
| SAE | Oxide | Silication | | | | | | | | | | | | | | |
| REGULAR | 0.0 | 0.0 | | | | | | | | | | | | | | |
| MACROGRAFIA/MACROGRAPHY | | | | | | | | | | | | | | | | |
| Blue Fracture (H) | | | | | | | | | | | | | | | | |
| 1 | | | | | | | | | | | | | | | | |

2/6

3/6

GERDAU
CHARQUEADAS



OUR MANAGEMENT SYSTEM IS CERTIFIED TO ISO 9001 / 181000 / 181000 / 181000 / 181000

CERTIFICADO DE QUALIDADE
QUALITY CERTIFICATE
CERTIFICADO DE CALIDAD

Page 2/2

| | | | | | | | | | |
|---|--|--------------------------------|--|-------------------------------|-----------------------------------|--|--|--------------------------|--|
| PART NUMBER 0168 | | PESO/WEIGHT (KG) 40.553.000 | | MATERIAL/MATERIAL 70501345 | | PRODUTO/PRODUCT HOT ROLLED ROUND BAR NO HEAT TREATMENT | | CERT. N° 0000822442 | |
| CLIENTE/CUSTOMER KATON STEEL BAR COMPANY | | | | QUALIDADE/GRADE 4140TR | | | | CORRIDA/HEAT 12080470 | |
| TEMPERABILIDADE/HARDENABILITY | | | | | | | | | |
| 1/16" | | 2/16" | | 3/16" | | 4/16" | | 5/16" | |
| HRC 59.5 | | HRC 59.1 | | HRC 58.8 | | HRC 58.2 | | HRC 58.0 | |
| 24/16" | | 26/16" | | 28/16" | | 30/16" | | 32/16" | |
| HRC 43.3 | | HRC 42.8 | | HRC 42.7 | | HRC 42.5 | | HRC 42.0 | |
| GRAU DE REDUÇÃO/REDUCTION RATE | | | | | | | | | |
| 6.991 : 1 | | | | | | | | | |
| OBSERVAÇÕES/OBSERVATIONS | | | | | | | | | |
| Meltschop route: ZAF, LF, VD, CC. | | | | | | | | | |
| Made in Brazil at Gerdau Charqueadas. | | | | | | | | | |
| Produced according to ASTM A104 and ASTM A322 | | | | | | | | | |
| Reduction Ratio: 7.1:1 | | | | | | | | | |
| Melted in Brazil | | | | | | | | | |
| Rolled in Brazil | | | | | | | | | |
| ENVIRONMENTAL RECOMMENDATIONS RELATED TO PRODUCTS: | | | | | | | | | |
| In order to contribute with the environment and sustainable development of our productive chain, we recommend to our clients to dispose accordingly the waste related to our products, according to the environmental legislation of your region, state or country. | | | | | | | | | |
| DEPARTAMENTO DA QUALIDADE / QUALITY DEPARTMENT | | | | | BR-AL-CHARQUEADAS-APF. 20.09.2017 | | | | |
| AURÉ L. SILVA FERNANDES CREA 0682601000 | | | | | | | | | |

Lab Services Report



10221 Capital Avenue
Oak Park MI 48237
(248)543-3578 telephone
(248)398-1434 facsimile

Bill To: Apollo Heat Treating and Processing Company, LLC

Ship To: Apollo Heat Treating and Processing Company, LLC
10400 Capital Avenue
Oak Park, MI

Attn: Randy Call
10400 Capital Avenue
Oak Park, MI

Report Date: 12/20/2017
Report ID: 17-4982
Request ID:

This report contains results for the indicated services performed on the following sample(s).

| Part No | 8556 | Finish | HR | Shape | Round | PO # | 823764 |
|-----------------|-------|--------|------|--------------------|--------|------|--------|
| Size | 4.000 | Grade | 4142 | Work Order | 823764 | | |
| Titan Sample ID | | | | | | | |
| Heat | | | | Customer Sample ID | | | |
| 17-4982-1 | | | | 823764 JOB 3173 | | | |

Report Approved By: Steve Avery

Mechanical Testing

ASTM E8M-16a
ASTM E10-17

| Sample ID | Ultimate Tensile, psi | 0.2% Offset Yield, psi | Elongation - Manual, % | Reduction of Area, % | HSW Surface |
|-----------|-----------------------|------------------------|------------------------|----------------------|-------------|
| 17-4982-1 | 153,100 | 134,400 | 19 | 55 | 313 |

Test Comments
Mechanicals tested at Midradius



Any services within a section marked with " are not part of Titan Metallurgy's current AZLA accreditation. All testing performed by Titan Metallurgy was done at ambient (room) temperature.

4/6

5/6



Heat Treating & Processing Company, LLC

10400 Capital Avenue • Oak Park, Michigan 48237 • (248) 398-3434

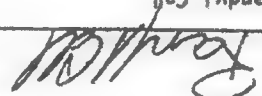
CERTIFICATION OF HEAT TREATMENT

Date: 12 / 29 / 2017
Certification Number: 17 - 0888
Customers Order Number: 823764
Part Number: 8168 - 8556
Heat Number: 12080470
Heat Treat Job Number: 3173

Material: 4140
Quantity: 84 Pcs.
Weight: 83,449 Lbs.
Description: 4.0000" Diameter x 23' 4" Length
Per Specification: ESHT HT4140 - 42QT

| | | | |
|-----------------------|--------------------|--------------------|-----------------------|
| | Temperature | Time at Heat | Coolant |
| Normalized | N/A | | |
| Preheat | N/A | | |
| Austenitized/Hardened | 1575 °F | 1 Hour 30 Minutes | |
| Spray Quenched | 98.1 °F - 104.9 °F | N/A | Water |
| Temper | 1150 °F | 2 Hours 35 Minutes | Air Cooled to Ambient |
| Temper | N/A | | |

Method of heat treat monitor, set point thermocouple (Type K). Equipment calibrated per AMS2750E. We hereby certify the above material has been treated in the manner described are correct as contained in the records of Apollo Heat Treating and Processing, LLC.


Randy L. Call
Plant Manager
Apollo Heat Treating & Processing, LLC



10400 Capital Avenue • Oak Park, Michigan 48237 • (248) 398-3434

CERTIFICATION OF HEAT TREATMENT

Date: 12 / 29 / 2017
 Certification Number: 17 - 0889
 Customers Order Number: 823764
 Part Number: 8168 - 8556
 Heat Number: 12080470
 Heat Treat Job Number: 3173

Material: 4140
 Quantity: 91 Pcs.
 Weight: 91,375 lbs.
 Description: 4.0000" Diameter x 23' 4" Length
 Per Specification: ESHT HT4140 - 42QT

| | | | |
|-----------------------|--------------------|--------------------|-----------------------|
| | Temperature | Time at Heat | Coolant |
| Normalized | N/A | | |
| Preheat | N/A | | |
| Austenitized/Hardened | 1575 °F | 1 Hour 30 Minutes | |
| Spray Quenched | 98.1 °F - 104.9 °F | N/A | Water |
| Temper | 1150 °F | 2 Hours 35 Minutes | Air Cooled to Ambient |
| Temper | N/A | | |

Method of heat treat monitor, set point thermocouple (Type K). Equipment calibrated per AMS2750E. We hereby certify the above material has been treated in the manner described are correct as contained in the records of Apollo Heat Treating and Processing, LLC.

[Signature]
 Randy L. Call
 Plant Manager
 Apollo Heat Treating & Processing, LLC

6/4

H:\FORMS\Quality Assurance\approved QA\MRIF Material Receipt Inspection Form revD

| | |
|-------------------------|-----------------------------------|
| QC 18 INSPECTION | ENGINEERING SIGNOFF (if required) |
| INSPECTED BY: <u>AT</u> | SIGNED OFF BY: _____ |
| DATE: <u>18/5/18</u> | DATE: _____ |

| | | | | | |
|--|-----|-------|-------|---------|--|
| CUT SAMPLE PIECE OF MATERIAL AND PERFORM A HARDNESS CHECK. | | | | | |
| RECORD RESULTS BELOW | | | | | |
| HRC | HRB | DUR A | DUR D | WEBSTER | |
| TYPE OF MATERIAL | | | | | |
| SIZE OF TEST SAMPLE | | | | | |
| HARDNESS / DUROMETER READING | | | | | |

| DESCRIPTION | NCR (Check Y/N) | COMMENTS |
|---|-----------------|-----------------------------|
| SURFACE DAMAGE | Y (N) | |
| CORRECT FINISH | Y (N) | |
| CORROSION | Y (N) | |
| CORRECT GRAIN DIRECTION | Y (N) | |
| CORRECT MATERIAL PER M-DRAWING | Y (N) | use for dot tooling only to |
| CORRECT THICKNESS | Y (N) | |
| PHOTO REQUIRED | Y (N) | |
| CORRECT REF # TO LINK CERT | Y (N) | 44: 12080476 cat 2442 |
| CORRECT MATERIAL IDENTIFICATION | Y (N) | |
| CORRECT # ON THE MATERIAL | Y (N) | |
| DOES THIS MATERIAL REQUIRE ENGINEERING SIGN OFF | Y (N) | |
| DOES THIS REQUIRE AN EXTRUSION REPORT | Y (N) | |

| | |
|----------------------|-----------------|
| MATERIAL: | MT-44002T-24.00 |
| DATE: | 18/07/18 |
| MATERIAL CERT RECD: | Yes |
| QUANTITY RECEIVED: | 3' |
| QUANTITY INSPECTED: | 3' |
| QUANTITY REJECTED: | 0 |
| THICKNESS ORDERED: | 4.00" |
| THICKNESS RECEIVED: | 4.00" |
| SHEET SIZE ORDERED: | — |
| SHEET SIZE RECEIVED: | — |
| PO / BATCH NO.: | P00403745042900 |


| REV. | DESCRIPTION | ECN # | DATE | BY | APPROVED |
|------|-------------|--------|----------|----|----------|
| A | NEW ISSUE | 17-720 | 17.12.13 | VM | ML |

SPECIFICATION CONTROL DRAWING

PURCHASE MATERIAL : AISI 4140 ROUND BAR
MINIMUM ROCKWELL C = 20 Rc
MAXIMUM ROCKWELL C = 38 Rc

SPECIFICATION: ASTM A29, AMS 6349, AMS 6382, AMS 6529

PART NUMBER: MT-4140-R[D,DDD]
WHERE "D,DDD" = DIAMETER IN INCHES
EX. 4" ROUND BAR = MT-4140-R-4.000

| | |
|---|----------|
|  DART AEROSPACE | |
| TITLE AISI 4140 ROUND BAR | |
| PART NO MT-4140-R | REV A |
| DESIGNED BY: VM 17/12/13 CHECKED BY: VM 13/10/2017 APPROVED BY: ML 12/07/2017 SCALE: 1:1 SHEET 1 OF 1 | |
| UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES DECIMALS ARE TO 3 PLACES FRACTIONS ARE 1/16" INCREMENTS HOLE DIMENSIONS ARE TO 1/32" INCREMENTS TOLERANCES: DIMENSIONS: ±.015 ANGLES: ±.5° FINISHES: AS SUPPLIED | |
| COPYRIGHT © 2017 BY DART AEROSPACE LTD ALL RIGHTS RESERVED NO PART OF THIS DOCUMENT MAY BE REPRODUCED OR TRANSMITTED IN ANY FORM OR BY ANY MEANS, ELECTRONIC OR MECHANICAL, WITHOUT PERMISSION IN WRITING FROM DART AEROSPACE LTD. | |



CERTIFIED MILL TEST REPORT

Aspen Steel Test Lab
85 E. 1st Street
Aspen, CO 81601-5001
(970) 453-4490 EXT 2406
(970) 453-4491 (Fax)

BILL TO

Beacon Steel Corporation
14221 Oxford Avenue
Oak Park, IL 60327

SHIP TO

Beacon Steel Corporation
c/o Aspen Steel Test
10000 Oakton Street
Oak Park, IL 60327

Date: 08/26/2017
AS Order No.: 45317
AS Order Line Item: 1

Customer P.O. No.: 15013

Material Description: 15013-MS

Specimen: SAE 4140
ASTM A 309-11, ASTM A 313-07

Heat Number: 177569

Test Number: 177569

Test Results:

Heat Number: 177569

Test Results:

Test Results:

Test Results:

Test Results:

Test Results:

Test Results:

Test Results:

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Test Results:

Heat: 177569

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#44919
 heat run per receipt
 P4140-14-V
 P6.12367
 49633

Eaton Steel Bar Company Inspection Certificate 1686880 EN 10204:2004-3.1

| Customer | BOL | Ship Date | Customer PO | Item | Customer Item | Item Description |
|----------|-------|-------------|-------------|---------------|---------------|--|
| | 22244 | 12-Dec-2017 | B38394 | 11442 rev 005 | 506295 | 1 HR RD 4140/4244M 24R18in SBQ QTSF PG MST |

All bundles listed below were produced using steel from Heat 177559 issued by ALTON STEEL and were completed from Eaton Steel Job 820517.

| Chemistry | Element | Value | Unit | Technical | Qualification | Unit |
|-----------|-------------------------------|-----------------|------|--------------|----------------------------------|------------------|
| C | Carbon | 0.41000 | PMCT | TENSILE PSI | Tensile Strength in PSI Units | 148000 PSI |
| Mn | Manganese | 0.89000 | PMCT | YIELD PSI | Yield Strength in PSI Units | 138000 PSI |
| P | Phosphorus | 0.01300 | PMCT | ELONGATION | Percent Elongation | 17.00 PCT |
| S | Sulfur | 0.02000 | PMCT | REDUCTION | Percent Reduction in Area | 52.0 PCT |
| Si | Silicon | 0.23000 | PMCT | BRINELL SURF | Brinell Surface | 271.0 RHN |
| Mo | Molybdenum | 0.06900 | PMCT | HAZARD | HAZARD | Value |
| Cr | Chromium | 0.84700 | PMCT | TEMPER | Temper Temp in Fahrenheit | 500 - 2500 DROF |
| Al | Aluminum | 0.15900 | PMCT | AUSTEN | Austenite Temp in Fahrenheit | 1600 - 1700 DROF |
| Cu | Copper | 0.25000 | PMCT | SN TRAP | Strain Relief Temp in Fahrenheit | 500 - 2500 DROF |
| V | Vanadium | 0.02800 | PMCT | TEMP P | Temp at Temperature | 0 - 20 GEN |
| Co | Cobaltum | 0.00300 | PMCT | TEMP HZ | Temp at Temperature | Report |
| N | Nitrogen | 0.01100 | PMCT | QUENCH | Quench Media Requirements | PAN/O |
| P-8 | Plomont Stem Limit | 0.03300 | PMCT | STRESS | Stress Stress Free | CERTIFIED |
| DI | Ideal Diameter | 4.94000 | IN | HAZARD | HAZARD | Value |
| Chemistry | Description | Value | Unit | HAZARD | HAZARD | Value |
| Geometry | Description | Value | Unit | HAZARD | HAZARD | Value |
| DIAMETER | DIAMETER | 0.3910 - 1.0090 | IN | HAZARD | HAZARD | Value |
| 1 | 2 1/4 inch from Quenched End | 56 | HRB | HAZARD | HAZARD | Value |
| 2 | 2 1/4 inch from Quenched End | 56 | HRB | HAZARD | HAZARD | Value |
| 3 | 2 1/4 inch from Quenched End | 56 | HRB | HAZARD | HAZARD | Value |
| 4 | 4 1/4 inch from Quenched End | 56 | HRB | HAZARD | HAZARD | Value |
| 5 | 5 1/4 inch from Quenched End | 55 | HRB | HAZARD | HAZARD | Value |
| 6 | 6 1/4 inch from Quenched End | 54 | HRB | HAZARD | HAZARD | Value |
| 7 | 7 1/4 inch from Quenched End | 52 | HRB | HAZARD | HAZARD | Value |
| 8 | 8 1/4 inch from Quenched End | 51 | HRB | HAZARD | HAZARD | Value |
| 9 | 9 1/4 inch from Quenched End | 50 | HRB | HAZARD | HAZARD | Value |
| 10 | 10 1/4 inch from Quenched End | 47 | HRB | HAZARD | HAZARD | Value |
| 11 | 11 1/4 inch from Quenched End | 45 | HRB | HAZARD | HAZARD | Value |
| 12 | 12 1/4 inch from Quenched End | 42 | HRB | HAZARD | HAZARD | Value |
| 13 | 13 1/4 inch from Quenched End | 42 | HRB | HAZARD | HAZARD | Value |
| 14 | 14 1/4 inch from Quenched End | 41 | HRB | HAZARD | HAZARD | Value |
| 15 | 15 1/4 inch from Quenched End | 39 | HRB | HAZARD | HAZARD | Value |
| 16 | 16 1/4 inch from Quenched End | 36 | HRB | HAZARD | HAZARD | Value |
| 17 | 17 1/4 inch from Quenched End | 35 | HRB | HAZARD | HAZARD | Value |

Eaton Regs with Eaton Steel Identifiers reference the steel grade, heat, purchase order number where applicable, part number, product description and quantity. Material produced in accordance with Eaton Steel's Quality Manual QMA-00002 Rev 0 dated 11/21/2013.

We hereby certify the above to be in conformance, and a true copy of data represented in company records. This steel was not subject to weld repair or exposed to machinery while in the possession of Eaton Steel.

Created on 12-Dec-2017
 Thomas Shabes, Corporate Metallurgist
 10223 Capital Avenue, Oak Park, MI 48237 USA
 Tel: 248-388-3434
 Fax: 248-388-1424



GERDAU

Huntington Facility - Test Report
25 Commercial Road, Huntington, NY 48750
(260) 356-8200
Fax (260) 356-8532

Printed: 10/26/2017 11:10 AM

| | | | |
|-------------|--------|---------------|--|
| Sales Order | 41745 | Customer Name | EATON STEEL CORPORATION |
| Heat Number | 177659 | Location | 10221 CAPITAL AVE. OAK PARK, MI 48237 |
| Size | 1.0000 | | |
| Turned On | 1.0000 | | |
| Grade | 4140 | | |

Test Identifier: 1 HR RD 4140/2MM 25T FQ FG MET W0 828517 FQ 11142

Approved ☒ By: M. S. M. Approved Date: 10/26/17

| Chemistry Data | C | Mn | P | S | Si | IN | Cr | Mo | Cu | Al | V | B | Other |
|----------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|--------|-------|
| Heat Number | 0.410 | 0.080 | 0.013 | 0.020 | 0.230 | 0.085 | 0.247 | 0.158 | 0.250 | 0.023 | 0.028 | 0.0030 | |
| 177659 | | | | | | | | | | | | | |

| CAI Hardness Test Data | Hardness Type | Min | Max | Location | Sample Location |
|------------------------|---------------|------|-----|----------|-----------------|
| Rc | | 27.8 | | | Surface |
| Rc | | 32.2 | | | Mid Radius |
| Rc | | 33.7 | | | Core |

| CAI Tensile Test Data | Sample Gauge: 500" Dia. | Bolt Number: | Yield 1 | Method 1 | Yield 2 | Method 2 | Elong % | R/A % | Gage Length | Tensile Location | PC # |
|-----------------------|-------------------------|--------------|---------|----------|---------|----------|---------|-------|-------------|------------------|------|
| 148 KSI | | | 2% | Offset | | | 17.0 | 52.0 | 2.00" G.L. | Center | |
| 138 KSI | | | | | | | | | | | |

Heat Treatment Data
Austenitized at 1,650°F for 0.7 minutes
Tempered at 1,400°F for 0.7 minutes
Induction Heating
Water Quenched

| Other Test Data | Ductile | Strength | Magnesium | As Quenched | Microstructure |
|-----------------|-----------|----------|-----------|-------------|----------------|
| (Index) | 0.12575 P | 4.5 | (R) | | |

Description of Other Tests
• Produced Stress Free

We hereby certify that the reported data are correct according to chemical tests and traces of its suppliers.

Chief Metall. Engineer

FE017A

Page 1 of 1

422637


| REV. | DESCRIPTION | ECON # | DATE | BY | APPROVED |
|------|-------------|--------|----------|----|----------|
| A | NEW ISSUE | 17-780 | 17.12.13 | VM | ML |

SPECIFICATION CONTROL DRAWING

PURCHASE MATERIAL : AISI 4140 ROUND BAR
MINIMUM ROCKWELL C = 20 Rc
MAXIMUM ROCKWELL C = 38 Rc

SPECIFICATION: ASTM A29, AMS 6349, AMS 6382, AMS 6529

PART NUMBER: MT-4140-R[D,DDD]
WHERE "D,DDD" = DIAMETER IN INCHES
EX. 4" ROUND BAR = MT-4140-R-4.000


| | | | |
|---|--|---|--|
|  <small>MEMPHIS, TENNESSEE, CHINA, CANADA</small> | | TITLE AISI 4140 ROUND BAR | |
| PART NO MT-4140-R | | REV A | |
| TOOL NO. VM 1717213 | | UNITED STATES SPECIFICATIONS <small>INTERPRET FOR A BAR, TYPE 3008</small> <small>INTERPRET FOR A BAR, TYPE 3008</small> | |
| DESIGNED BY: VM 1717213 DRAWN BY: VM 1717213 CHECKED BY: VM 1717213 APPROVED BY: VM 1717213 | | TOOLMANAGER: <small>SCALE: 1:1</small> <small>SCALE: 1:1</small> <small>SCALE: 1:1</small> <small>SCALE: 1:1</small> | |
| CONTRACT NO. 2017 BY DART AEROSPACE LTD | | PROPORTIONS: 1:1 ANGLES: 2:3 ROUNDNESS: 0.005 SCALE: 1:1 SHEET: 1 OF 1 | |

| REV. | DESCRIPTION | DATE | BY | APPROVED |
|------|-------------|----------|----|----------|
| A | NEW ISSUE | 17.08.12 | WM | WM |

SPECIFICATION CONTROL DRAWING

PURCHASE MATERIAL : AISI 4140 QUENCHED & TEMPERED STEEL ROUND BAR
 SPECIFICATION: ASTM 4140 QT or ASTM 4142 QT
 PART NUMBER: MT-4140QT-R [D.DDD]
 WHERE "D.DDD" = DIAMETER IN INCHES
 EG. 5/8" ROUND BAR = MT-4140QT-R0.625

C&M 11-655

| | |
|--|----------------------------------|
|  DART AEROSPACE | |
| TITLE | |
| AISI 4140 Q&T ROUND BAR | |
| WORK NO. | REV |
| MT-4140QT-R | A |
| DESIGNED BY: VM 08/14/2017 | XXX 2 500 FRACTIONS 1/8 |
| CHECKED: VM 08/14/2017 | XX 1 01 ANGLES 1/4 |
| WFO APPROV: DP 08/14/2017 | 1 DIMENSIONS ARE IN INCHES = 1/4 |
| DATE: 08/14/2017 | 2. ALL DIMENSIONS ARE PRECISED |
| APPROVED: VM 08/14/2017 | 3. ALL DIMENSIONS ARE PRECISED |
| DATE: 08/14/2017 | 4. ALL DIMENSIONS ARE PRECISED |
| DATE: 08/14/2017 | 5. ALL DIMENSIONS ARE PRECISED |
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| DATE: 08/14/2017 | 56. ALL DIMENSIONS ARE PRECISED |
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| DATE: 08/14/2017 | 58. ALL DIMENSIONS ARE PRECISED |
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| DATE: 08/14/2017 | 60. ALL DIMENSIONS ARE PRECISED |
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| DATE: 08/14/2017 | 62. ALL DIMENSIONS ARE PRECISED |
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| DATE: 08/14/2017 | 66. ALL DIMENSIONS ARE PRECISED |
| DATE: 08/14/2017 | 67. ALL DIMENSIONS ARE PRECISED |
| DATE: 08/14/2017 | 68. ALL DIMENSIONS ARE PRECISED |
| DATE: 08/14/2017 | 69. ALL DIMENSIONS ARE PRECISED |
| DATE: 08/14/2017 | 70. ALL DIMENSIONS ARE PRECISED |
| DATE: 08/14/2017 | 71. ALL DIMENSIONS ARE PRECISED |
| DATE: 08/14/2017 | 72. ALL DIMENSIONS ARE PRECISED |
| DATE: 08/14/2017 | 73. ALL DIMENSIONS ARE PRECISED |
| DATE: 08/14/2017 | 74. ALL DIMENSIONS ARE PRECISED |
| DATE: 08/14/2017 | 75. ALL DIMENSIONS ARE PRECISED |
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| DATE: 08/14/2017 | 80. ALL DIMENSIONS ARE PRECISED |
| DATE: 08/14/2017 | 81. ALL DIMENSIONS ARE PRECISED |
| DATE: 08/14/2017 | 82. ALL DIMENSIONS ARE PRECISED |
| DATE: 08/14/2017 | 83. ALL DIMENSIONS ARE PRECISED |
| DATE: 08/14/2017 | 84. ALL DIMENSIONS ARE PRECISED |
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| DATE: 08/14/2017 | 86. ALL DIMENSIONS ARE PRECISED |
| DATE: 08/14/2017 | 87. ALL DIMENSIONS ARE PRECISED |
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| DATE: 08/14/2017 | 91. ALL DIMENSIONS ARE PRECISED |
| DATE: 08/14/2017 | 92. ALL DIMENSIONS ARE PRECISED |
| DATE: 08/14/2017 | 93. ALL DIMENSIONS ARE PRECISED |
| DATE: 08/14/2017 | 94. ALL DIMENSIONS ARE PRECISED |
| DATE: 08/14/2017 | 95. ALL DIMENSIONS ARE PRECISED |
| DATE: 08/14/2017 | 96. ALL DIMENSIONS ARE PRECISED |
| DATE: 08/14/2017 | 97. ALL DIMENSIONS ARE PRECISED |
| DATE: 08/14/2017 | 98. ALL DIMENSIONS ARE PRECISED |
| DATE: 08/14/2017 | 99. ALL DIMENSIONS ARE PRECISED |
| DATE: 08/14/2017 | 100. ALL DIMENSIONS ARE PRECISED |

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| | |
|----------------------|-------------------|
| MATERIAL: | M-T-4140QT-21.000 |
| DATE: | 18/07/18 |
| MATERIAL CERT REC'D: | Yes |
| QUANTITY RECEIVED: | 20' |
| QUANTITY INSPECTED: | 20' |
| QUANTITY REJECTED: | 0 |
| THICKNESS ORDERED: | 1.000" |
| THICKNESS RECEIVED: | 1.000" |
| SHEET SIZE ORDERED: | — |
| SHEET SIZE RECEIVED: | — |
| PO / BATCH NO.: | PO040374/S093068 |

Attach this inspection sheet with the corresponding material cert and remit to be scanned and received in

QC 18 INSPECTION

ENGINEERING SIGNOFF (if required)

SIGNED OFF BY: _____

DATE: 18/07/18

INSPECTED BY: 

| | | | | |
|--|-----|-------|-------|---------|
| CUT SAMPLE PIECE OF MATERIAL AND PERFORM A HARDNESS CHECK. | | | | |
| RECORD RESULTS BELOW | | | | |
| HRC | HRB | DUR A | DUR D | WEBSTER |
| | | | | |
| | | | | |
| TYPE OF MATERIAL | | | | |
| SIZE OF TEST SAMPLE | | | | |
| HARDNESS / DUROMETER READING | | | | |

testers located in the Quality Office

| DESCRIPTION | NCR (Check Y/N) | COMMENTS |
|---|------------------------------------|-----------------------|
| SURFACE DAMAGE | <input checked="" type="radio"/> Y | |
| CORRECT FINISH | <input checked="" type="radio"/> Y | |
| CORROSION | <input checked="" type="radio"/> Y | |
| CORRECT GRAIN DIRECTION | <input checked="" type="radio"/> Y | |
| CORRECT MATERIAL PER M-DRAWING | <input checked="" type="radio"/> Y | use 50t draft tooling |
| CORRECT THICKNESS | <input checked="" type="radio"/> Y | |
| PHOTO REQUIRED | <input checked="" type="radio"/> Y | |
| CORRECT REF # TO LINK CERT | <input checked="" type="radio"/> Y | MT: 177569 |
| CORRECT MATERIAL IDENTIFICATION | <input checked="" type="radio"/> Y | |
| CORRECT M# ON THE MATERIAL | <input checked="" type="radio"/> Y | |
| DOES THIS MATERIAL REQUIRE ENGINEERING SIGN OFF | <input checked="" type="radio"/> Y | |
| DOES THIS REQUIRE AN EXTRUSION REPORT | <input checked="" type="radio"/> Y | |